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To Mobilize Farmers to Increase Pulpwood

Governor Goodland Will Conduct Campaign In Wisconsin—Some Emergency Steps Already Taken By Conservation Commission and Special Wood Marketing Service Will Be Expanded—Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., September 7, 1943—As soon as the farmers in Wisconsin have completed their harvest work, they will be mobilized under a campaign to be conducted by Governor Walter S. Goodland to overcome the critical shortage of pulpwood. The governor is a former newspaper publisher, and recognizes the importance of the extensive cutting of suitable timber on farms and forest lands in order to keep the mills operating at capacity.

Some emergency steps already have been taken by the Wisconsin Conservation Commission. Galen W. Pike, forest supervisor of the Nicolet National Forest, in northern Wisconsin, has been detailed to the commission's offices at Madison, Wis., as area forester and will function as state coordinator.

Mr. Pike will organize all state and federal foresters now on the ground in an expediting service coordinated at the state level and integrated with the War Production Board expediters, at the regional level in the Lake states. The field force, according to the present plan, will be made up of 11 conservation department forest men, 12 from the soil conservation service, and eight U. S. Forest Service men. Special foresters also are being hired to aid farmers in selecting, cutting and marketing most effectively the timber from their own woodlots.

The special timber marketing service set up by Fred B. Trenk of the state agricultural extension service several months ago will be expanded to help serve the need. It releases monthly bulletins on prices, market demands and available supplies for the convenience of producers and buyers of timber.

In Marinette County, the pulpwood committee is making a survey of timber land owners who are willing to have their acreage logged, and will attempt to recruit the necessary labor and trucking facilities. A booth was set up at the Wausaukee County fair, where literature was distributed and advisers were on hand to present the pulpwood plan to farmers.

Newspapers are giving liberal publicity in all of the prospective areas, and the cumulative results are expected to show within the next few weeks. At Wausau, Wis., *The Daily Record-Herald* is publishing interviews with mill executives quoting them as to the needs. The series started last week with quotations from Harold O. Collins, president of the Wausau Paper Mills Company, Brokaw, Wis., pointing out how many products needed in the war effort depend upon a constant flow of timber to the mills.

Waste Paper Salvage Drives Continue

Campaigns also are being conducted to step up the collection of waste paper to augment the dwindling mill supplies. Hummel & Downing Company, Milwaukee, makers of box board, are using large display space in the metropolitan papers calling on householders and business places to dispose of their waste paper through regular collection sources. A meeting of the waste paper jobbers was held recently at which they agreed to raise their prices so as to make the market more attractive to the householders. A standard set of prices was established.

At Wisconsin Rapids, Wis., the churches collected 11 tons of waste paper for the Consolidated Water Power and Paper Company on the first day of a campaign suggested by Fred Burt, buying representative for the company. The collections will continue at stated intervals.

Mills Interested in Freight Legislation

Wisconsin paper mills are interesting themselves in 14 bills introduced by southern congressmen seeeking to reduce class rates on freight 5 to 7% while letting the commodity rates go unchanged. The proposals also would shift the authority for establishing rates from the Interstate Commerce Commission to Congress.

Northern and eastern states have had lower class rates because of the greater volume of manufactured products and density of population, but have paid higher commodity rates than the South.

It is believed by Wisconsin industrial and business groups that any decision favoring the South will disrupt the ecenomy of the entire nation. This view is shared by the Southern Paper Manufacturers Traffic Conference, which says: "The present system of

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Quebec Government to Auction Forest Lands

Three Blocks Comprising 14.2 Square Miles To Be Leased For 20-Year Period — Wood For Sawmills Exclusively — Forest Studies In Sweden Recommend Cultivation To Grow More Wood Per Acre.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., September 6, 1943—The Quebec government has announced that certain blocks of forest lands in Begin Township, Chicoutimi County, will be offered at public auction at the Parliament Buildings, Quebec City, on September 15. The purpose is to furnish supplies of wood to sawmills. One block is of 5.4 square miles, another 4.3 square miles, and the third of 4.5 square miles.

The first mentioned two blocks are located in the watershed of the River Blanche, and the third in the watershed of Grand Lake a Ours and Lake des Iles.

The duration of the leases to be granted is limited to 20 years, in addition to ordinary conditions, and the wood is to serve exclusively for sawmills. Leases will be renewable each year of the 20-year period. The adjudication bonus is fixed at $2,000 per square mile. No bids over the adjudication bonus will be accepted for less than $10 per square mile, and each successive bid shall be an additional $10 per square mile, No lumbering will be permitted in the 200-foot zone on each side of the water courses without express permission of the Minister of Lands and Forests. The timber cut shall be measured by the government officers for stumpage dues purposes. The protection of the limits will be exclusively done by the department, at the expense of the lessees.

The wood must be used in a sawmill built within the limit, or within the territory of which it is tributary, geographically or economically.

Any person wishing to make a bid must put up a guarantee of $2,000 for any of the three blocks, and this will be confiscated if no bid is made. At the expiration of the 20-year lease all improvements made on the property become the property of the government.

To prevent the limits from being held for speculation, the lessee, in addition to the ground rent, must pay an amount annually equal to the stumpage dues on 2,000 cubic feet of wood on each and every square mile of the limits not operated, or when the operations do not attain such a maximum.

The leases will be subject to other ordinary requirements of the regulations of the department, when not incompatible with the conditions outlined, which includes approval of building plans, cutting plans, payment of ground rents and stumpage dues.

Forest Research in Sweden

News has just been received here from Stockholm, that Sweden forest experts in that country, much concerned over the heavy depletion of old timber reserves, are devoting themselves to the question of how to raise more timber per acre. Fertilization of forest areas has been tried and has proved too expensive on a large scale. Dr. Bertel Lindquist has expressed the view that cultivation is the answer to the problem, and says effective efforts to free the soil from parasites, fungi, etc., are now the subject of experiment. He expresses the view that the heavy cutting of firewood in North Sweden—the chief source of timber to the large export sawmills and pulp mills—may paradoxically be said to have been rather useful, as it has tended to thin out and restore the growth of useful timber in many areas, which have for a long time been unproductive of such timber.

Another authority, Professor Henrik Pettersson of the Swedish Forestry Research Station, says that an intensive work is carried on by the Swedish plant-improvement institutions for introducing larger and faster growing species but that proper care of the growing timber must be considered to be the most effective means of obtaining immediate results. Very extensive areas in the country are still indifferently cared for and might be made much more productive than they are at present.

It is further reported that in Dalecarlia heather-covered forest land has been treated with chloral for killing the ground vegetation and parasites. This, it is stated, was a very effective measure and was really identical with the burning of the forest, practiced by the oldest settlers, which cleared the undergrowth and provided ash for fertilization. Nothing more effective than this method can be conceived, the report says, but the ground has to be perfectly dry and this renders the firerisk altogether too great.

According to the Stockholm report, it seems to be the consensus of opinion of the experts that complete removal of the undergrowth and waste wood is the only way to keep the soil in good condition. To find the best method of attaining this result is now the most urgent object of research in various quarters, where different ways of treating the soil are being tried. According to the Swedish experts some method better than the rest is bound sooner or later to materialize from this work.

Employment in Wisconsin Mills

Employment in Wisconsin paper and pulp mills and allied industries was up 0.3% for July over June, with 23,900 now on the payrolls, according to the Wisconsin Industrial Commission. The total is 0.8% higher than July a year ago, when 23,700 workers were employed.

Weekly payrolls for July averaged $840,000 for July as compared to $860,000 in June, down 2.3%. They were 16.0% higher than July of last year, however, when the weekly average was $720,000. The decrease is accounted for in part because mills were shut down in some places over the Independence Day weekend to give the workers a vacation.

Workers averaged 82 cents per hour during July, putting in 42.9 hours and receiving weekly checks averaging $35.18.

Mills and converting plants of the Milwaukee metropolitan area had 2,214 on the payrolls in July, 0.3% less than June. Weekly average payrolls of $79,914 were 2.0% less than June.

The hourly rate averaged 79.7 cents for 45.3 hours, or $36.09 per week.

R. T. Bingham Succeeds V. F. Waters

The executive committee has appointed Richard T. Bingham as technical assistant to R. G. Macdonald, secretary, of the Technical Association of the Pulp and Paper Industry to succeed Vincent F. Waters, who was the original appointee.

Mr. Bingham is a 1933 graduate of the Pulp and Paper Department of the New York State College of Forestry and comes to TAPPI from the Paper Development Laboratory of the Titanium Pigment Corporation. He was formerly with the Imperial Paper and Color Corporation and the Kimberly-Clark Corporation.

RICHARD T. BINGHAM

The past experience of Mr. Bingham in the paper industry should prove very helpful to him in serving TAPPI members and the industry. He is well-known to many executives, superintendents, and engineers in the industry.

Mr. Waters has been appointed editor of *Southern Pulp and Paper Journal* by Ernest H. Abernethy, president of the Ernest H. Abernethy Publishing Company, Inc., Atlanta, Ga. Mr. Waters goes to *Southern Pulp and Paper Journal* with a background of nearly twenty years' experience in pulp and paper manufacture, mill engineering and technology, management, machine building, and publishing.

In 1938, Mr. Waters was selected by the executive committee of the Technical Association of the Pulp and Paper Industry to serve as technical assistant to the secretary-treasurer, R. G. Macdonald.

To Hold Joint Meeting at Glens Falls

The New York-Canadian Division of the American Pulp and Paper Mill Superintendents Association with the Empire State Section of TAPPI as its guests will hold its fall meeting at the Queensbury Hotel in Glens Falls, September 24 and 25.

An interesting program has been arranged which includes a golf tournament for the men and a boat ride to Paradise Bay on Lake George for the ladies. A ladies' bridge tournament will also be held.

To Control Government Stationery

WASHINGTON, D. C., September 1, 1943—Standard regulations to control the printing and use of Government letterheads, memorandum forms and envelopes—designed to save thousands of tons of paper and to reduce printing costs—are being issued today by the Bureau of the Budget, according to Harold D. Smith, director. In effect, a ceiling has been placed on the grades and weight of paper to be used as well as a tighter control established over the printing of these items.

Estimates of annual savings in paper which may result approximate 9,500,000 pounds and in dollar value nearly $2,000,000. The new regulation is the result of combined study by the Budget Bureau, the Post Office Department and the Government Printing Office.

Major restrictions include the following:

Letterheads—Only two sizes allowed (8 x 10½ and 8 x 5¼); paper not to exceed 25% rag content with weight substance of 16 pounds, commercial standard, or sulphite bond stock of 20 pounds; in printing, only one color ink allowed; names of officials or officers not to be printed, thus reducing obsolescence and ultimate waste. Similar restrictions are placed on continuation and manifold sheets, with no additional printing allowed.

Office Memorandum Forms—Only one type of these forms (two sizes) will henceforth be used throughout Government, resulting in uniformity and a large saving in printing cost. The standard form is printed in the regulation.

Envelopes—Administrative officials are instructed in every case to require the use of the smallest suitable envelope and the folding of enclosures accordingly; they are further advised of the necessity to conserve fiber stock for the war effort by curtailing the use of the larger sizes of Kraft envelopes.

The regulation concludes by listing 17 general suggestions for saving paper, including the following:

Use back of letter being answered for carbon copy of reply;

Type reply, or reply in longhand, on the bottom of incoming letters and memoranda where reply is brief and no permanent record is necessary;

Save the larger size incoming kraft envelopes to be re-used for interoffice correspondence envelopes;

Use postal cards whenever practical.

Wood Pulp Statistics

The 1943 edition of Wood Pulp Statistics has just been published by the United States Pulp Producers Association, Oliver M. Porter, executive director, 122 East 42nd street, New York, at $2 a copy.

It contains extensive ten-year data on United States pulp capacity, production, consumption, stocks, price trends, etc. Available official data on pulp imports and exports compiled by the United States and Canadian Governments are included. Statistics are given for all world pulp producing and importing countries prior to 1939.

New material not found in former editions include consumption figures of fibrous materials in paper and paper board production, a chart of regional wood pulp production and data on maximum prices on wood pulp for export, which became effective April 20, 1942.

Awards for Government Papers

WASHINGTON, D. C., September 7, 1943—North American Pulp and Paper Company has been awarded a contract for furnishing the Government Printing Office with 50,000 pounds of white chemical wood writing paper at 9 cents. Other paper awards recently announced include the following.

Barton, Duer & Koch Paper Company will furnish 100,000 pounds of 50% rag, white manifold paper at 18.20 cents and the same firm will also furnish 200,000 pounds of white machine coated book paper at 6.40 cents. Central Ohio Paper Company will furnish 100,000 pounds of 25% rag white bond paper at 13.94 cents and Walker Goulard Plehn Company will furnish 100,000 pounds of 50% rag white manifold paper at 18.45 cents.

Stanford Paper Company will furnish 69,108 pounds of chemical wood white writing paper at 7 cents and Frank Parsons Paper Company will furnish 300,000 pounds of white ground wood writing paper at 5.35 cents. Same company will furnish another 300,000 pounds of same at the same price. Marquette Paper Company will furnish 308,000 pounds of white offset poster paper at 8.12 cents and Butler Company will furnish 774,000 pounds of white machine coated book paper at 6.05 cents. Barton, Duer & Koch Paper Company will furnish 1,164,000 pounds of same at 5.85 cents and the Stanford Paper Company will furnish 180,000 pounds of chemical wood white writing paper at 7.1 cents. Bermingham & Prosser will furnish 100,000 pounds of white chemical wood writing paper at 8.9 cents.

Ditto Sales & Service will furnish 160,000 pounds of white Ditto paper at $10.40 cwt. and the Cauthorne Paper Company will furnish 104,000 pounds of white chemical wood mimeograph paper at 7.92 cents. The same firm will also furnish 89,500 pounds of white antique book paper at 10.5 cents and the Whitaker Paper Company will furnish 51,250 pounds of Quaker drab cover paper at 8.32 cents.

Meade Sales Company will furnish 101,100 pounds of white poster paper at 6.84 cents. The same firm will also furnish 61,600 pounds of the same at the same price and 92,400 pounds of the same at the same price. Maxwell Paper Company will furnish 94,800 pounds of offset book paper at 7.566 cents and Coy, Hunt & Company will furnish 145,000 pounds of white English finish book paper at 7.45 cents.

Moser Paper Company will furnish 100,000 pounds of white machine finish book paper at 7.69 cents and the Meade Sales Company will furnish 560,000 pounds of white super calendered book paper at 7.29 cents. Stanford Paper Company will furnish 400,000 pounds of white M.F. book paper at 7.3 cents and Walker Goulard Plehn Company will furnish 158,000 pounds of white offset paper at 7.83 cents.

Champion Coated Paper and Fibre Company will furnish 736,000 pounds of white offset book paper at 7.55 cents and Bradner Smith & Company will furnish 110,000 pounds of white machine finish book paper at 7.69 cents. R. P. Andrews Paper Company will furnish 175,000 pounds of white litho finish map paper at 16.2 cents.

Stanford Paper Company will furnish 200,000 pounds of white litho finish map paper at 15.75 cents and Walker Goulard Plehn Company will furnish 21,440 pounds of white offset book paper at 7.45 cents.

Marquette Paper Company will furnish 80,000 pounds of tan cover paper at 10.50 cents and 120,000 pounds of super calendered book paper at 5.48 cents. Mudge Paper Company will furnish 376,648 pounds of newsprint paper at 3 cents and 3.05 cents and R. P. Andrews Paper Company will furnish 312,000 pounds of poster paper at 7.05 cents. Stanford Paper Company will furnish 480,000 pounds of white sulphite writing paper at 6.28 and Eastern Corp. will furnish 800,000 pounds of same at 6.47 cents. R. P. Andrews Paper Company will furnish 55,000 pounds of white rag bond paper at 11.07 cents and Bulkley, Dunton & Company will furnish 71,750 pounds of buff sulphite writing at 8.25 cents. Aetna Paper Company will furnish 70,000 pounds of white index paper at 9.97 cents and Eastern Corporation will furnish 443,844 pounds of chemical wood writing paper at 7.25 and 6.5 cents. Bulkley, Dunton, and Company will furnish 19,000 pounds of buff chemical wood index paper at 8.8 cents and 31,500 pounds of white same at 8.05 cents. Barton, Duer and Koch Paper Company will furnish 300,000 pounds of chemical wood white writing paper at 6.49 cents and Fitchburg Paper Company will furnish 5,000,000 pounds of safety chemical wood writing paper at 11.5 cents.

Paper Corporation of U. S. will furnish 16,250 pounds of cherry manifold paper at 19.3 cents and same firm will furnish 48,750 pounds same green at same price. Same firm will also furnish 79,000 pounds same white at 18.8 cents. Walker Goulard Plehn Company will furnish 23,400 pounds of white ledger paper at 14.45 cents and same firm will also furnish 52,400 pounds same at same price and Central Ohio Paper Company will furnish 50,000 pounds of same at 14.74 cents.

Paper Corporation of U. S. will furnish 13,800 pounds of green rag manifold paper at 19.3 cents and Barton, Duer and Koch Paper Company will furnish 6,030 pounds of white writing paper at 23 cents. Barton, Duer and Koch Paper Company will furnish 54,800 pounds of buff railroad board at $69.65 per M sheets and Cauthorne Paper Company will furnish 118,000 pounds of ground wood writing paper at 5.5 cents. Paper Corporation of U. S. will furnish 13,000 pounds of 50% rag salmon manifold paper at 19.8 cents and the same firm will also furnish 83,375 pounds of white machine finish book paper at 7.09 cents.

Michigan Division to Meet

The next meeting of the Michigan Division of the American Pulp and Paper Mill Superintendents Association will be held on Thursday, September 16 at the Park-American Hotel in Kalamazoo. Dinner will be served at 6:30 P.M.

George A. Hermann, vice president of the Hermann Manufacturing Company will speak on Stock Preparation.

First Vice-Chairman Glen Sutton, in charge of arranging programs for the division announces that the program committee is planning to present a series of films on various phases of the paper industry and other topics of current interest during the coming year.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending September 4, 1943

STOCKS

	High	Low	Last
A. P. W.	1⅞	1⅞	1⅞
Armstrong Cork Co.	38	37	38
Celotex Corp.	13	12¾	12¾
Celotex Corp., pf.	19	18½	19
Certain-Teed Products Corp.	5⅞	5⅝	5⅝
Certain-Teed Products Corp., pf.	54¼	53	53¾
Champion Paper & Fibre Co.	20¼	20	20¼
Champion Paper & Fibre Co., pf.	107½	107	107½
Congoleum Nairn Co.	22	21½	22
Container Corp. of America	19⅜	18⅞	19
Continental-Diamond Fibre Co.	12¼	11⅞	11⅞
Crown Zellerbach Co.	15¾	15⅝	15¾
Crown Zellerbach Co., pf.	98⅜	97½	98⅜
Dixie Cup Co.	13	13	13
Dixie Cup Co.—A	44⅜	44	44½
Flintkote Co.	20	19	19⅝
Flintkote Co., pf.	107	105¼	107
Robert Gair	2⅜	2½	2⅜
Robert Gair, pf.	12⅛	12¾	12¾
International Paper Co.	11⅜	10½	11¼
International Paper Co., pf.	60¼	58½	60¼
Johns-Manville Corp.	84⅞	83⅝	84⅞
Johns-Manville Corp., pf.	133	132½	132½
Kimberly-Clark Corp.	....	....	....
MacAndrews & Forbes	26¼	25⅜	26¼
MacAndrews & Forbes, pf.	....	....	....
Masonite Corp.	38	38	38
Mead Corp.	8¼	7¼	8⅛
Mead Corp., pf. A—6%	84	84	84
Mead Corp., pf. B—5½	77	76	76
Paraffine Companies, Inc.	....	....	....
Paraffine Companies, Inc., pf.	100¾	100¾	100¾
Rayonier, Inc.	15	14⅝	14½
Rayonier, Inc., pf.	31	30¾	30½
Ruberoid Co.	26¾	26⅛	26½
Scott Paper Co.	41	41	41
Scott Paper Co., pf.	112⅝	112⅜	112⅜
Sutherland Paper Co.	30	29½	29½
Union Bag & Paper Corp.	9⅝	9¼	9⅜
United Paperboard Co.	4⅜	3⅞	4⅜
U. S. Gypsum Co.	70	69⅜	69½
U. S. Gypsum Co., pf.	175½	175½	175½
West Virginia Pulp & Paper Co.	14⅜	14½	14⅜
West Virginia Pulp & Paper Co., pf.	107	107	107

BONDS

Abitibi Pulp & Paper Co. 5s '53	67⅜	67⅜	67⅜
Celotex Corp. 4½s '47	....	....	....
Certain-Teed Products Corp. 5½s '48	102	101	101
Champion Paper & Fibre Co. 4¾s '50	....	....	....
International Paper Co. 6s '55	106½	106	106
International Paper Co. 5s '47	104¼	104¼	104¼
Mead Corp. 3½s '53	....	....	....
West Virginia Pulp & Paper Co. 3s '54	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending September 4, 1943

STOCKS

	High	Low	Last
American Box Board Co.	....	....	....
Brown Co., pf.	....	....	....
Great Northern Paper Co.	33½	33	33½
Hummel-Ross Fibre Corp.	4¼	4¼	4¼
National Container Corp.	....	....	....
St. Regis Paper Co.	3⅛	3	3¼
St. Regis Paper Co., pf.	136	136	136
Taggart Corp.	4	4	4

BONDS

American Writing Paper Co. 6s '61	97	95	97

Southern Advance Earns $1.29

The Southern Advance Bag and Paper Company for the six months to June 30 reports a net income of $307,951 or $1.29 a common share, against $373,665 or $1.68 a common share, last year; sales, $4,432,102, compared with $5,049,373.

Hinde & Dauch Vote Dividend

A common stock dividend of 50 cents a share has been voted by the Hinde & Dauch Paper Company for payment October 1. The two previous payments were 25 cents each.

Bathurst Co. Earns Less

MONTREAL, Que., September 6, 1943—The Bathurst Power and Paper Company, of Bathurst, N. B., reports that operating results in the second quarter of the year showed a certain improvement in comparison with the poor showing of the first quarter, but earnings before taxes still ran well under a year ago, the drop being something like 46%, against a drop of 72% experienced in the three months ended March 31. Much improved water conditions combined with resumption of newsprint production to cause the modest second quarter improvement. The cost situation continued adverse.

For the six months ended June 30, the company reported a profit of $374,399, subject to audit and year-end adjustments, after depreciation and depletion but before providing for Dominion income and excess profits taxes, according to a note to shareholders, accompanying the quarterly dividend cheques. This figure compares with $881,282 for the first half of 1942. Taking income tax at 40%, the half-year profit would work out at 56c a share on the A stock, against $1.32 in the first half of 1942. In the note to shareholders it is pointed out, however, that while provision for taxes was at rates aggregating 40% in each year the final liability for such taxes is uncertain and an adjustment may be necessary before or at the end of the year.

Based on the figures issued for the first quarter—a profit on above basis of $117,739 against $425,090—the second quarter's profit was $256,660 against $456,192 for the second quarter of last year.

As of June 30, 1943, current assets stood at $5,340,881, including cash and marketable securities of $1,767,134, leaving working capital of $4,575,975, against $4,255,515 as of March 31, 1943.

Anglo-Newfoundland Co. Issues Report

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., August 30, 1943—The annual report of the Anglo-Newfoundland Development Company, Limited, shows that operating profits for the year 1942, after depreciation, depletion and income taxes, amounted to $232,992, as compared with $542,793 in 1941 and the high in recent years of $1,214,661 in 1940.

While dividends from its subsidiary, Terra Nova Properties, were slightly better at $252,850 as compared with $245,850 in 1941, there was no dividend from Anglo-Newfoundland Steamship in 1942, as compared with $297,581 the previous year. The result was that total income of $485,842 was less than half the 1941 income of $1,086,224. Debenture stock interest of $262,735, debenture stock redemption of $279,940 and directors' fees of $13,500 left a net deficit for the year of $70,333 as compared with net income of $530,049 or 31 cents per share the previous year and $656,311 or 38 cents per share in 1940.

Controlled by the Rothermere interests, the company is the principal source of supply of newsprint paper for the London Daily Mail and its association

newspapers, and for Newfoundland newspapers, and has a 25-year contract with Associated Newspapers, Limited, for supply of all of that company's newsprint requirements, expiring January 1, 1958. The company owns the entire capital stock of Anglo-Newfoundland Steamship Co., which owns two vessels of over 8,500 deadweight each; and holds over 98% of the issued shares of Terra Nova Properties, Limited, which holds mineral rights over an area of 2,320 square miles and operates, jointly with American Smelting and Refining Company, a subsidiary known as Buchans Mining Co., having a daily capacity of 1,200 tons of lead and zinc concentrates.

Sorg Co. Votes Dividend

The board of directors of the Sorg Paper Company, Middletown, O., declared a dividend of $1.50 a share on Series A preferred stock and $1 per share on Series B preferred stock, C. B. Stiles, secretary, announced Monday. Both dividends are payable October 1 to stockholders of record September 15, Stiles said.

The dividends, he added, were being paid on account of unpaid cumulative dividends.

Crown Zellerbach Nets 52 Cents

The Crown Zellerbach Corporation and subsidiaries for the quarter to July 31 reports a consolidated net profit of $1,839,702, equal, after preferred dividends, to 52 cents each on 2,261,199 common shares, against $1,803,147, or 50 cents a share, for July quarter a year ago. Sales and other income totaled $24,006,733, an increase of $3,170,068 over 1942 period.

S. D. Warren Co. Votes Dividend

BOSTON, Mass., August 30, 1943—The S. D. Warren Company declared a dividend of 50 cents a share, payable September 24 to stockholders of record September 15.

The company previously paid 25 cents each on March 26 and June 25.

West Virginia Declares Dividend

The West Virginia Pulp and Paper Company has ordered a dividend of 30 cents a share on the common, payable October 1 to stock of record September 15. Previous payments this year were 15 cents each on January 2, April 1 and July 1.

Rayonier, Inc. Nets 15 Cents

Rayonier, Inc., and wholly owned subsidiary, the Georgia Timber Company, reports for the quarter to July 31, a consolidated net profit of $454,000, equal, after preferred dividends, to 15 cents each on 963,871 common shares, compared with $550,493, or 25 cents a share, last year.

To Increase Paper Production in Java

Plans have reportedly been made by the Jap invaders to increase production of paper in Java, which formerly depended upon Japan and Scandinavia for most of its supply. Raw materials being used in producing pulp for Java's three paper mills are straw, kapok waste, and old paper, the core of a certain plant, and a variety of pine.

Recommend 5 Per Cent Newsprint Cut

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 8, 1943—A net reduction of an additional 5% in newsprint usage for the fourth quarter of 1943 was recommended by the Newspaper Industry Advisory Committee meeting last week with War Production Board representatives in Washington. This is expected to bring about a total reduction of 15% since the first of the year. The original Order L-240, effective January 1, 1943, reduced quotas by approximately 5%, and a further 5% cut was ordered on July 1.

Exact percentage of the reduction in the fourth quarter cannot be determined by WPB until the Combined Resources and Production Board meets in the near future to learn the maximum tonnage Canada can deliver during the fourth quarter. Canada has been delivering 210,000 tons of newsprint per month since January 1.

The Newspaper Industry Committee advised against a larger percentage cut and recommended only 5%, because it felt the necessary tonnage could be taken out of inventories.

The committee also recommended a reduction in permitted publishers inventories of newsprint from 50 days to 40 days supply in the Northeast and Central region and from 75 days to 65 days in the West and South effective September 1, 1943. Publishers would be required to revise their September delivery orders to conform to these new inventory restrictions.

The committee recommended that WPB grant no personal or telephone interviews in connection with appeals for additional tonnage, and that all communications concerning appeals be "in writing and in writing only."

It was decided that future regular meetings of the commmittee be held on the third Tuesday of each month, beginning with October 19. This will make reports on the newsprint situation during the preceding month available to the committee at its meetings.

The committee recommended that in placing orders with suppliers of newsprint, each publisher be required to certify that his order is in accordance with the inventory provisions of Order L-240.

It also recommended that all appeals except those based on emergencies arising during the quarter be required to be filed 15 days before the commencement of the quarter for which appeal tonnage is required; that facilities be provided so all appeals may be acted upon by WPB by the 15th day of the quarter; and that a list of all appellants and additional tonnage requested be released for publication in the week following that in which such appeals were filed.

It further recommended that written decison be made in each case of action upon appeals and printed in the Federal Register.

John Massengale Advanced

At a recent meeting of the Board of Directors of Eastern Corporation, Bangor, Maine, John E. Massengale was elected vice president in charge of sales. Mr. Massengale joined the company's sales department in 1940, as Chicago District Sales Manager. In 1942 he was made sales manager and moved to the Bangor general offices. His many friends in the paper industry will welcome the news of his promotion to an officer of the company.

Wisconsin Committee Starts Campaign

The Wisconsin Forest Industries Information Committee, since its formal organization in July, under the guidance of Folke Becker, Chairman, president of the Rhinelander Paper Company, has embarked upon a public relations program expounding the objectives, status, and performance of the industry in connection with a plan to enlist necessary support in dealing with certain operating problems which have distinct public ramifications. The present Congressional recess has provided an appropriate occasion to solicit the attention of those legislators toward the immediate and critical needs of the mills and toward some long range objectives. As a result of personal efforts by this Committee, it is certain that Congressmen will return to Washington with an entirely new and expanded appreciation of what the industry means to war production and to the domestic economy.

The immediate problem of the industry pertains to insufficient or indeterminate timber supplies, the root of which lies in existing manpower deficiencies in the woods operations. As a means of combatting this threatening aspect and in order to improve production by utilizing all available facilities, the Committee has enlisted the interest of several state agencies including the Executive Office, the Conservation Department, the Department of Agriculture, and the University of Wisconsin, whose joint ramifications extend into every corner and community of the state and whose prestige is invaluable to any state wide effort. There are a good many details that will require personal handling by experienced people bearing the confidence of the public in order to carry through such an extensive production campaign. These apply to cutting, inspection, measurement and transportation in addition to the job of persuading timber owners that it is their duty to produce. Because a substantial part of the total timber supply is in the hands of farmers and woodlot owners, it is logical that these people be approached in an aggressive, but tactful manner. Farmers are now too busy with their threshing and harvests to give thoughtful attention to appeals to produce forest products. Also, the farmer is in a more independent financial situation and his woodlot represents an asset of enduring value which he is not obliged to liquidate. Consequently, any appeal to the farmer to offer his timber must be timely and impressive. Through the cooperation of all of these agencies together with the current publicity campaign in the newspapers, the Committee hopes to increase this type of production substantially.

The personnel of the Wisconsin Committee is representative of the various types of operating timber ownerships and consists of the following:

Folke Becker, president (Wisconsin State Chairman), Rhinelander Paper Company, Rhinelander, Wis.

John Stevens, vice-president, Marathon Paper Mills Co., Rothchild, Wis.

F. E. Sansenbrenner, secretary, Kimberly-Clark Corp., Neenah, Wis.

V. I. Ruhmer, manager, C. M. Christiansen Company, Phelps, Wis.

E. B. Hurst, forester, Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis.

H. C. Collins, president, Wausau Paper Mills Company, Wausau, Wis.

F. G. Kilp, forester, Nekoosa - Edwards Paper Company, Nekoosa, Wis.

J. D. Mylrea, president, Rib Lake Lumber Company, Rib Lake, Wisconsin.

O. T. Swan, secretary, Northern Hemlock and Hardwood Manufacturers Association, Oshkosh, Wis.

H. S. Crosby, forest products engineer (secretary of the Committee) Northern Hemlock and Hardwood Manufacturers Association, Oshkosh, Wis.

Appoints Book Paper Committee

WASHINGTON, D. C., September 8, 1943—Fourteen representatives of the book industry have been appointed by the Office of Price Administration as a Book Paper Industry Advisory Committee, OPA announced today.

Large and small companies and different geographical areas of the country are represented on the committee.

The purpose of the committee is to establish a closer working relationship between the Office of Price Administration and the industry.

Recently, the papers manufactured by this industry were removed from the control of the General Maximum Price Regulation and put under a new regulation, Maximum Price Regulation No. 451—Book Paper.

The initial meeting for the purpose of electing officers and completing other organizational details will be held in New York on September 8, 1943.

The committee follows: N. H. Bergstrom, vice-president, Bergstrom Paper Company, Neenah, Wis.; A. B. Milham, president, Bryant Paper Company, Kalamazoo, Mich.; H. W. Suter, vice-president, The Champion Paper and Fibre Company, Hamilton, Ohio; A. P. Story, president, The Chillicothe Paper Company, Chillicothe, Ohio; R. M. Beckwith, president, Crocker, Burbank Papers, Inc., Fitchburg, Mass.; G. R. Wallace, president, Fitchburg Paper Company, Fitchburg, Mass.; Sherman Adams, Parker-Young Company, Lincoln, N. H.; J. R. Kimberly, vice-president, Kimberly-Clark Corporation, Neenah, Wis.; R. I. Worrell, president, The Mead Sales Company, New York; D. L. Stocker, president, The Michigan Paper Company, Plainwell, Mich.; C. A. Clough, secretary, New York & Pennsylvania Co., Inc., New York; C. A. Gordon, vice-president, Oxford Paper Company, New York; George Olmstead, Jr., vice-president, S. D. Warren Company, Boston, Mass., and J. R. Miller, vice-president, West Virginia Pulp and Paper Company, New York.

Bauer Bros. Get White Star

SPRINGFIELD, Ohio, August 31, 1943—The White Star, Army-Navy Production Award for continued and determined effort and patriotism, has been awarded the Bauer Brothers Company, first company in Springfield to receive the Army-Navy "E," according to a letter received by Charles L. Bauer, president and general manager, from Undersecretary of War Robert P. Patterson.

The White Star is conferred by the Army and Navy on war production plants throughout the country for continued quality and quantity of production in the light of facilities available.

Award of the Army-Navy "E" for exceptional performance on production front, was made August 17, 1942, with presentation of awards to officials and employes September 4. Approximately 97 per cent of its activities are devoted to war contracts.

Limits Use of Paper Bags

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 8, 1943—Due to the existing shortage of paper, the War Production Board today limited the use of paper in manufacturing grocers and variety bags. This will result in a reduction in the number of bags available in grocery stores, variety stores, drug stores and other retail outlets.

The limitation is contained in an amendment to Limitation Order L-261.

The action was taken as part of an over-all paper conservation program to assure, among other important needs, a sufficient supply of paper packaging material for essential war requirements, such as the shipment of munitions supplies to the armed forces overseas, and the domestic movement of food and manufactured articles from the farms and factories to other factories or to distribution points, including retail outlets.

As a result, curtailments or complete elimination in various uses of paper have been found necessary. However, a substantial amount is still provided for grocers' and variety bags.

WPB urged retailers and the public to cooperate in making the most efficient use of the reduced supply.

The limitation is in the form of a production quota on the paper tonnage which bag makers may use in making grocers and variety bags during each quota period. The first quota period is the month of September. Thereafter the quota periods are quarterly (October-December, January-March, etc.). The quota percentage for a full quarterly quota period is 70% of the paper tonnage used by the bag maker for grocers' and variety bags during the six-month base period October 1, 1941, through March 31, 1942. For the first quota period, which covers the month of September only, the quota is 12%, or approximately ⅓ of the quota for a full 3-month quota period. During the 1941-42 base period, paper consumption in the bag industry was somewhat higher than the normal rate of consumption. Therefore, the reduction now imposed by one L-261 quota is not as great as the 70% figure would indicate.

Other related provisions of the amendment are as follows:

1. A temporary quota is allowed for any bag maker whose plant was completely out of operation for a substantial time during the six-month base period.

2. Provision is made for carrying over unused quotas from one quota period into the first month of the next quota period. Provision is also made for borrowing, in the last month of a quota period, up to ⅓ of the quota expected for the next quota period. This will assist bag makers in leveling off their operations, to account for seasonal and other variations.

The amendment also includes some changes in the existing provisions of the order. This order, which was originally issued on February 27, 1943, standardized and simplified paper bag lines. It also placed inventory restrictions on bag makers, dealers, and users.

The following changes are included:

1. The definition of "grocers and variety bags" has been changed to identify more specifically the types of bags included.

2. The restrictions on bag makers' paper inventories have been removed since those inventories are controlled by the Pulp and Paper Order (M-241).

3. Minor corrections in the standardization specifications have been made.

4. The order now prohibits, in most cases, the manufacture of any stock bag from more than one weight of the same grade of paper. The application of this restriction to certain bags which may be made from more than one weight of the same grade of paper is clarified.

5. A 5% tolerance in figuring paper basis weights has been provided.

TAPPI Notes

A feature of the TAPPI Army and Navy Requirements Conference (Palmer House, Chicago, Ill., September 21-24, 1943) will be a broadcast of part of the Armed Services Sessions on September 21. Addresses over WGN will be made by Rear Admiral William B. Young, Chief of the Bureau of Supplies and Accounts of the Navy, and Brig. General E. E. MacMorland of the Office of the Army Chief of Ordnance. Senator Brooks of Illinois is also expected to speak and R. A. Hayward, president, will introduce the various speakers.

The following session has been added to the Conference: Case Studies Session, Thursday, September 23. R. A. Diehm, Container Corporation of America, chairman.

Water Resistant and Waterproof Tapes for Export Packaging by Burton L. Trodson, Mid-States Gummed Paper Company, Chicago, Ill.

Packaging of Electrical Equipment by H. H. Snyder, Stewart-Warner Corporation, Chicago, Ill.

Some problems in the Packaging of Dairy Products by J. B. Stine, Kraft Cheese Corporation, Chicago, Ill.

Apparatus for Measuring Gas Transmission Through Sheets and Films by H. R. Todd, American Can Company, Maywood, Ill.

Registration for the TAPPI meeting will begin at 4 P. M. Monday, September 20. Because of the large attendance expected, registration should be made as early as possible. A large number of trade associations in the paper and converting industries will meet in Chicago during the week of September 20.

The paper by J. B. Gough on Vat-Circle Width appearing in this issue of the PAPER TRADE JOURNAL will be the basis of the Roundtable discussion of the TAPPI Papermaking Committee on September 22.

Plant visits during the meeting are being arranged to include the Chicago Tribune, W. F. Hall Printing Company, and R. R. Donnelley & Sons.

A golf tournament will be held on Thursday, September 23, at the Tam O'Shanter Golf Club, under the auspices of the Chicago Paper Association. All attending the conference are invited to participate.

E. N. Wennberg, formerly of the Brown Company is now superintendent of the Columbia River Paper Mills, Vancouver, Wash.

Clarence J. West, Jr., is now a second lieutenant in the Anti-Aircraft Div. of the Coast Artillery at Camp Stewart, Georgia.

D. K. MacBain, formerly of the Weyerhaeuser Timber Company, is now with Berst-Forster-Dixfield Company, 155 E. 44th St., New York, N. Y.

The Technical Section of the Canadian Pulp and Paper Association, 3420 University Street, Montreal, P. Q., has issued a 192 page volume of Engineering Data Sheets and this is obtainable at 5 dollars per copy.

Chicago to Hold Regional Meeting

Arthur H. Chamberlain, secretary of the National Paper Trade Association, has sent out the following announcement:—

"In our bulletin of some weeks ago announcing cancellation of the fall convention, we stated that a regional meeting in Chicago was under consideration. Arrangements for such a meeting have now been completed.

"The meeting will be held at the Palmer House, Chicago, on Wednesday, September 22, starting at 9:30 A.M. It will be under the auspices of the Chicago Paper Association but Acting President Kettles with other National officers and the staff will be on hand prepared to make up-to-date reports and give the latest information and advice on matters affecting the trade.

"Coincident with our Regional Meeting, the Army and Navy Requirements Conference sponsored by the Technical Association of the Pulp and Paper Industry will be held at the Palmer House, Tuesday to Friday, September 21-24. Sessions are scheduled dealing with the Navy, the Army and the Ordnance Departments which our members are invited to attend.

"At the same time a most interesting and important Exhibit of Pulp and Paper Products used for war purposes will be installed in the Palmer House Exhibit Hall. Motion pictures will be shown to illustrate various phases of the war effort and especially the part played by Paper in protective wrapping, packaging, etc. Army and Navy officers representing all branches will be present to discuss details regarding the materials on display. The Exhibit will be open September 21-24 inclusive, extending one day beyond the TAPPI sessions to give ample time for inspection of the displays.

"On Thursday, September 23, the day following the Regional Meeting, will be held the annual Golf Tournament of the Chicago Paper Association in which all paper merchants, mill men and other guests are invited to participate. A circular announcing this Tournament is enclosed herewith providing a perforated slip on which you can signify your intention to attend."

To Hold Joint Meeting at Poland Spring

The Northeastern Division of the Superintendents Association and the Maine and New Hampshire Section of TAPPI will hold a joint meeting at the Poland Spring House, Poland Spring, Maine, September 17 and 18, 1943.

Maurice F. McCarthy of the Superintendents Association, and T. E. Barry of TAPPI, chairmen, respectively, of these two organizations, have selected two subjects for a focused, round-table discussion:

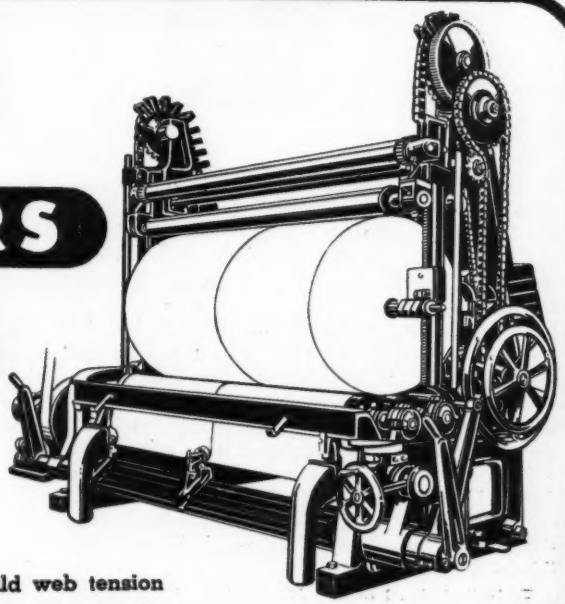
1. Plastics from Pulp and Paper.
2. Availability and Use of Starch and its Substitutes.

A three-hour session beginning at 9:00 A. M. on Saturday will be given over to a question and answer period of discussion on these two subjects. It was decided to notify all Affiliates of this meeting and invite them to send representatives; also to submit questions which can be used in the discussion period.

WINDERS

REWINDERS

SLITTERS



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Obituary

Charles L. Ellis

DOWNINGTOWN, Pa., September 7, 1943—Charles Lewis Ellis, president and director of the Downingtown Manufacturing Company, widely known manufacturer of paper mill machinery, died suddenly on his way home to lunch Tuesday, August 31. He had suffered a serious illness last fall which lasted for several months, but since then he had been regularly at his office and appeared to be gaining in health. He was in his 72nd year.

Mr. Ellis was the fourth president of the Downingtown Manufacturing Company, succeeding Albert H. Standley, who died in 1941. He started to work for the Downingtown Manufacturing Company De-

CHARLES L. ELLIS

cember 1, 1911, after having previously been superintendent of the Pont Rouge Canadian Mill of Bird & Son, Inc. His work was largely connected with the sales department and he served as sales manager and vice president before becoming president and general manager.

He was well known in the industry and had a great many intimate friends. He was a man of considerable inventive ability and was largely instrumental in the conception and development of Downingtown's suction roll and extractor roll business. His pleasing personality and fund of stories made him a favored companion in any gathering and this, combined with his strength of character, made him a natural leader. The fact that he was known as "Uncle Charlie" by his co-workers indicates their affection and respect.

Mr. Ellis had lived at Bradford Hills for some 30 years past. He was a native of Boston, Mass., and attended the Massachusetts Institute of Technology. He was a director of the Mechano Corporation of Sandusky, Ohio.

During the years he spent with the Downingtown concern, now entirely devoted to war production, Mr. Ellis took an active part in civic affairs of the borough. He was a member of Council 1333, Knights of Columbus, of West Chester, and of the Benevolent and Protective Order of Elks. Likewise he was a member of the American Pulp and Paper Mill Superintendents' Association. For many years he was a member of the former Manufacturers' and Bankers' Association of Philadelphia. He was a devout member of St. Joseph's Catholic Church in Downingtown.

His widow, Margaret Carroll Ellis; one son, Enright A. Ellis, West Chester, and a granddaughter, Ruth Sayre Ellis, survive along with two brothers and one sister, Edward R. Ellis of Downingtown; Frank J. Ellis, Bradford Hills, and Mrs. Mary T. Divine, Bradford Hills.

Charles Kindleberger

Charles Kindleberger, Sr., 58, of 116 South Riverview drive, Parchment, Mich., died September 3 at the Leila Post hospital in Battle Creek following a short illness. He was a brother of Jacob Kindleberger, chairman of the board of the Kalamazoo Vegetable Parchment Company.

He was born in West Carrollton, Ohio, March 2, 1885, the son of Mr. and Mrs. John Kindleberger, and came to Parchment in 1916, where he had since made his home. He was a night foreman at the KVP.

Mr. Kindleberger was a member of the Lutheran church, Fidelity Masonic lodge, and an honorary member of the Starr Commonwealth.

Surviving are the wife, Estella Leever Kindleberger, whom he married in 1906; a daughter, Mrs. Georgia Munger of Scotts, and two sons, Charles Kindleberger, Jr., and Harold Kindleberger of Parchment; the one brother; and seven grandchildren.

William D. Thomas

The Directors of American Defibrator, Inc., announce with deep regret the death of its President, William D. Thomas. The management will continue the operations of the company, without change.

Forms Set-Up Box Committee

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 8, 1943—Eleven officials of paper box manufacturing firms were named today by the Office of Price Administration to serve on its Set-up Paper Box Industry Advisory Committee.

The purpose of the committee is to establish closer working relationship between OPA and the industry.

The initial meeting for the purpose of electing officers and other matters pertaining to permanent committee organization will be held in Washington, D. C., at 10:30 A. M., Friday, September 10.

Members of the new committee are as follows: Albert Bond, Consolidated Paper Box Company, Somerville, Mass.; Walter E. Trum, Gerbereux, Dufft & Kinder, Brooklyn, N. Y.; Charles H. Sprowles, Sprowles & Allen, Philadelphia, Pa.; Laurence Pollock, Pollock Paper Box Company, Dallas, Tex.; Albert S. Daniel, W. C. Ritchie & Company, Chicago, Ill.; Fred Zur Schmiede, Kentucky Paper Box Company, Louisville, Ky.; R. J. Lowe, F. N. Burt Company, Inc., Buffalo, N. Y.; E. E. Fairchild, E. E. Fairchild Corp., Rochester, N. Y.; Paul A. Clement, Atlanta Box Factory, Atlanta, Ga.; Mark Nolan, Keystone Box Company, Pittsburgh, Pa.; and Harold S. Fuller, Bicknoll & Fuller Paper Box Company, Boston, Mass.

Continental Presents Service Pins

The Continental Paper Company of Ridgefield Park, New Jersey, held recently at the C. C. Hall on South Main street, Hackensack, N. J., a service award and presented to 206 of their employees service pins in recognition of five years or more service with the company.

William J. Alford, Sr., founder of the company, was born in New Castle, Pa., the son of a minister. He worked in the steel, shovel and paperboard business in Chicago, Ill., Haverhill, Mass., New London, Conn., Piermont, N. Y., and England before he founded the Continental Paper Company in Ridgefield Park, N. J.

On October 15, 1912, the first paperboard was produced at the mill with a total daily production of 44 tons. Today the daily average production is 300 tons, almost all of which is being used for war and essential civilian needs.

Frank C. Sedlack, the oldest employee, was guest of honor and a large portrait of Mr. Sedlack was signed by all of the 300 employees present and will be suitably framed and presented to him. Mr. Sedlack was employed at the Continental Paper Company three days before any paper making activities and enjoys along with William J. Alford, Jr., president, the privilege of being two of the company's oldest employees, both being with the company 30 years.

A. E. Maves served as master of ceremonies and William J. Alford, Jr., presented pins to the employees.

E. Fritz, president of the United Paper Workers Union, Local 299, and F. D. Campbell, chairman of the labor management committee, accepted in behalf of the employees.

A telegram was read from A. B. Huyssoon, vice-president, who is on leave of absence and is now with the War Production Board as chief of the Paper Board Branch, who could not leave because of the pressure of official business in Washington.

William J. Alford, Jr., also presented 17 pins to Miss M. Dixon, plant nurse, who accepted them on behalf of the 17 employees now in the armed forces.

Beaverite Products Buys Glenfield Plant

BEAVER FALLS, N. Y., September 7, 1943—The Beaverite Products, Inc., has announced the purchase of the property formerly operated by the Papro Company at Glenfield, from its recent owner, the Gould Paper Co., of Lyons Falls. Possession has already been taken by the new owners and the plant is partially being used now for the storage of raw materials and machinery. For the past several years the Beaverite Products, Inc., has conducted a branch factory in Utica. The products manufactured in the latter plant were placed under curtailment order the first of this year and this caused the abandonment when the lease expired early in August. For the present these products will be manufactured in the local factory. No manufacturing is contemplated just now in the new acquisition at Glenfield although it may be necessary to start this plant in production before the end of the war. The chief products now manufactured are paper loose leaf catalogue covers, gaskets for the dairy and automotive industries and advertising specialties.

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PROFIT PRODUCERS

TENAX FELTS

No Shortcuts

Despite the growing scarcity of some materials in some fields, TENAX FELTS still are being made according to prewar specifications. Deliveries still are made on agreed dates. Please consult us regarding your problems and requirements

"Non-Users Are The Losers"

LOCKPORT FELT COMPANY

Newfane, N. Y. — U. S. A.

Triple-chain woven wire cloth, magnified about 32 times.

It is not easy to develop a product which will be used again and again — which is to be *standardized.* It is possibly even more taxing to have to evolve a *special* product — one which must be equally right, but will never be able to prove its case from a world of evidence. The triple-chain weave shown above is just such a specialty. It is comparatively delicate, fragile; calls for engineering with a very fine touch. Distinguished by extreme flexibility, a unique and smooth paper-making surface and good drainage characteristics, it has won a wide, lasting acceptance in the manufacture of certain grades of specialized tissues.

THE LINDSAY WIRE WEAVING COMPANY
Serving the Paper Industry Since 1903
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TO MOBILIZE FARMERS

(*Continued from page 7*)

freight rates has not and is not retarding the pace of industrial development in the South and Southwest. Any specific allegation to the contrary can be disproved when the facts are examined and studied concretely instead of through prolific indulgence in generalities and theories."

Neenah Co. to Receive "E" Award

The Neenah Paper Company, Neenah, Wis., is slated to receive the Army and Navy "E" award for accomplishment in the development and production of materials needed by the armed forces. Notice to this effect has been received from Robert P. Patterson, under secretary of war. Appropriate ceremonies are being arranged for the awarding of the flag and presentation of lapel pins to all employees.

Babcock Estate Appraised

Executors of the estate of Charles A. Babcock of Neenah, Wis., late president of the Wisconsin River Pulp and Paper Company, Stevens Point, Wis., have been notified that a refund of $32,277.24 has been approved as excess state inheritance tax payments. The original amount paid was $295,000, and the tax was later determined to be $276,550.17.

The estate has been finally appraised at $40,050,188.85. After deductions of $1,434,919.48 in state and federal estate taxes and claims of $106,477.89, the net estate left was $2,633,489.67. Of this amount, Mrs. Milsom B. Mory, a daughter, receives $1,137,876.55; Miss Joan Babcock of Oshkosh, Wis., a grand-daughter, $853,775; Miss Mary Milsom Mory and Miss Barbara Mory, Neenah, grand-daughters, $291,180 each, and a brother, Guy O. Babcock, $25,630.80. There were several other bequests, including $25,000 for Theda Clark hospital, Neenah.

Daughter of Nathan Bergstrom Engaged

Mr. and Mrs. Nathan H. Bergstrom, Neenah, Wis., have announced the engagement of their daughter, Alice, to Hugh Ramsey Moore of Oshkosh, Wis., who is serving in the U. S. Marine Air Corps. The announcement was made at a luncheon at the North Shore Golf Club September 3. Mr. Bergstrom is vice-president and secretary of the Bergstrom Paper Company. No date has been set for the wedding.

Stafford-Mahler Nuptials

One of the notable weddings of the season in the Fox River Valley was that of Miss Pauline Lyon Mahler and Ensign Richard Stafford, both of Neenah, Wis. It took place on Saturday afternoon, August 28, at the home of the bride's parents, Mr. and Mrs. Ernst Mahler, Neenah. The ceremony was performed by the Rt. Rev. Harwood Sturtevant, bishop of the Episcopal Diocese of Fond du Lac, Wis. The couple spent its honeymoon at the Mahler winter home at Tryon, N. C., after which Ensign Stafford will report to Cherry Point, N. C., for duty. The bride's father is executive vice-president of the Kimberly-Clark Corporation.

The index of value of paper mill inventories for June was 149.7 compared with 145.9 in May and 133.6 in June of last year taking an average month in 1939 at 100.

Campaigning for Pulpwood Production

The Minnesota and Ontario Paper Company, with mills at International Falls, Minn., Fort Frances, and Kenora, Ont., Canada, with the co-operation of the *Daily Journal*, an outstanding daily newspaper at International Falls, is waging a strong drive on the present campaign to increase production of pulpwood to keep its mills in full operation.

In addition to organizing county committees in

PAUL BUNYAN TELLS PULPWOOD STORY

approximately twenty communities in northern Minnesota and staging various stunts, the *Daily Journal* has established close contact with wood-lot farmers through the media of the County Fairs.

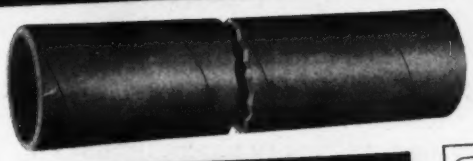
The mythical Paul Bunyan is characterized through Len Costley, employee of Minnesota & Ontario Paper Company. The large statured gentleman towering over six feet with his giant axe talks to farmers, gives them the pulpwood story, passes out free coffee and doughnuts, hands out souvenirs, and finishes his program by awarding a $25.00 war bond as one of the closing features of the Fair. He has appeared at the Lake of the Woods Fair at Baudette, Minn., on the Canadian border, and at two fairs in Koochiching County, the first being at Littlefork and the second at Northome. His schedule likewise took him to the community of Cook for the annual Dairy Cattle Day August 28, and to Kelliher in Beltrami County.

Wood-lot farmers have shown a great deal of interest in the drive and the *Daily Journal* hopes to increase the production of pulpwood to the point where the Minnesota and Ontario mills will keep operating throughout 1944.

Stoney Hill Goes with Columbia River

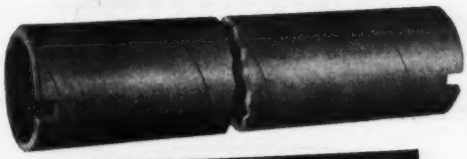
Ernest C. (Stoney) Hill, after several years as finishing room superintendent with the Provincial Paper, Ltd., Port Arthur Division, Port Arthur, Ontario, Canada, has accepted a position with the Columbia River Paper Mills, at their California-Oregon Mill in Los Angeles, Cal. Mr. and Mrs. Hill left September 1 for their new location.

4 Grades
PAPER MILL CORES
to fill every need, every cost requirement

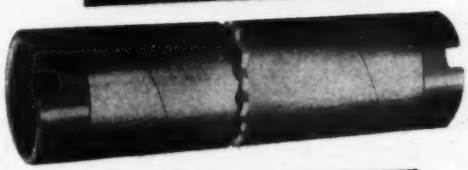


For all uses requiring an extremely tough non-returnable paper mill core.

RHINO NON RETURNABLE



DURO—Standard returnable core of plus-standard quality. Shown with Taylor ends. Also available with Bermico ends.



ENDURO—Very high grade returnable core to meet extra demand for strength. Shown with Bermico ends—Taylor ends available.

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Exclusive distributors for Bermico Ends and Birmico Fibre Cores.

BERMICO*—A returnable fibre core—extremely hard, strong and rugged. Treated to resist weather and moisture changes.

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PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.
Henry J. Berger
EDITOR

Vol. 117 September 9, 1943 No. 11

COMING EVENTS IN PAPER INDUSTRY

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Fall Meeting, Palmer House, Chicago, September 21-24, 1943.

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

INDUSTRIAL PROGRESS

Great progress has been made in the invention and development of a wide variety of industrial products under the almost insatiable demands of the war. When the whole remarkable story of American inventive genius and the practical application of science to achieve so huge a production of goods can be told, the accomplishments must far surpass anything created in the past. Substantial progress resulted in industry after the first World War. Greater things may be confidently expected at the conclusion of the present conflict. The scope of this forward movement is so wide that it includes all major industries and many smaller enterprises. In the paper industry we are familiar with the many new uses, developed for wood pulp to meet wartime requirements and when peace returns a greater paper and pulp industry will inevitably develop. Similar advances will occur in all other fields of production.

The way is being paved, as it was during the last war, for peacetime industrial developments of the greatest importance and value, states the Guaranty Trust Company of New York in the current issue of *The Guaranty Survey*. "At the same time, the emergency is delaying the utilization of many earlier inventions and discoveries that will become available after the war," *The Survey* continues. "Even a brief review of some of the more outstanding and widely known lines of progress shows that war, the great destroyer, has also its constructive side. Under the spur of wartime necessity, industrial developments that might otherwise require years or decades are compressed into months. But before this technical advance can be translated into terms of human well-being, war must give way to peace—a peace that preserves the freedom of enterprise that has been found indispensable to the exercise of ingenuity, the taking of risk and the putting forth of effort. For war will leave behind it also a wake of destruction, disorganization and impoverishment, together with a legacy of centralized control that can stifle individual initiative and that will tend to be perpetuated by the troublesome problems of readjustment that peace will bring to the world. The ingenuity of the scientist and the engineer must be matched by the wisdom of the business man and the statesman if the beneficial by-products of war are to be turned to full account."

In declaring that free enterprise is essential, *The Survey* goes on to say that, "If the world's standard of living fails to achieve new heights during the post-war era, it will not be for want of the technical foundations on which those standards rest. It will be because of failure to solve the complex economic, social and political problems that are being raised by the war and to perform the difficult readjustments that will become necessary with the return of peace. Unless these obstacles are surmounted, the world will be in grave danger of finding itself saddled with bureaucratic forms of government that the depression and the war have brought upon it and that will prove incompatible with the free institutions under which science and enterprise, working hand-in-hand, have achieved the unexampled material progress of the last century."

In referring to post-war industrial capacity, Congressman Albert Gore, of Tennessee, in his address on "The Place of the Congress," before the National Chamber War Council, said in part: "At the end of the war, what with the devastation wrought in the lands of other belligerents, the industrial capacity of the United States will likely exceed that of all other nations combined. We shall need outlets for that production and we shall also need access to the world's resources more than ever before, both because of our increased domestic demands and because of the rate at which war is consuming our resources now. There will be need and demand for everything we can produce provided an intelligent system of exchange and credit is established. Also, the United States will possess a large portion of the means of industrialization as well as of shipping facilities necessary for global interchange and world economic reconstruction. If we would but take a far-sighted leadership in world reconstruction and development, it would provide projection and unlimited incentive for our own problems of transition from a war to a peace economy."

In commenting on the financial problems involved Congressman Gore said that, "I am disturbed that so many people accept post-war depression and mass unemployment as unavoidable. I think we can find ways to avoid it. Indeed, we dare not permit another economic crash such as we had in the early '30's. There are alternatives if the nation and its Congress will but have the vision and courage to pursue them.

For one thing, we might explore the marvels of credit and time inherent in governmental finance. With these, we can do things; we can loose dynamic forces both here at home and in world rehabilitation never dreamed of. We are just now seeing what miracles of production we can perform given sufficient incentive and how enormously we can consume, too, with ample purchasing power."

Eastern Corp. Wins Printing Award

Eastern Corporation, Bangor, Maine, fine paper manufacturers, have been awarded the coveted Printing House Craftsmen Award, or certificate of cooperation "for furtherance of the educational accomplishments of international craftsmanship within the Graphic Arts."

Expressing his company's pleasure at the honor of receiving this distinguished recognition, President Clyde B. Morgan of Eastern Corporation said, "Our company's promotional efforts have long been aimed toward improving printing quality, creativeness and craftsmanship among printers. We have felt this to be a natural advertising theme, as a supplier to the graphic arts industry. This unexpected recognition and honor by the Printing House Craftsmen pleases us greatly, and heightens our purpose to continue to help printers to constantly improve printing qualities and techniques, so as to better serve buyers and users of printing."

Eastern Corporation sponsors the continuous Atlantic Bond Blue Ribbon Letterhead Contest, awarding blue ribbons to printers who submit outstanding letterhead designs on Atlantic bond. A competent judging committee makes the awards, based on typographic excellence, design, and printing quality.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1943		Corresponding Weeks—1942	
July 24	90.3	July 25	79.2
July 31	91.5	August 1	81.0
August 7	90.0	August 8	81.4
August 14	91.6	August 15	77.5
August 21	91.1	August 22	81.2
August 28	*91.5*	August 29	83.3

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1942	104.5	103.9	102.9	100.4	95.3	87.4	75.8
1943	87.2	88.9	89.5	88.7	91.5	86.5	*84.3*

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1942	80.8	82.8	90.6	86.9	80.1	90.4
1943	....	....	....	....	....	....

COMPARATIVE YEARLY SUMMARIES

	1936	1937	1938	1939	1940	1941	1942	1943
Year to Date..	78.0	87.1	68.8	78.8	86.8	94.5	93.5	*88.5*
Year Average..	80.4	79.8	71.5	83.4	85.6	97.4	90.4	....

*Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1937	83	89	89	91	88	80	69	77	72	70	57	47	75
1938	56	63	63	60	60	59	59	60	70	73	67	61	64
1939	65	73	76	74	69	73	68	77	82	91	88	77	77
1940	78	75	74	76	82	85	77	79	78	85	82	77	78
1941	81	88	89	89	91	94	92	98	95	99	98	90	92
1942	102	101	101	95	82	72	68	75	76	81	82	77	84
1943	86	88	94	94	96	94	89	96	..	..	..	..	..

Week ending July 24, 1943—97
Week ending July 31, 1943—97
Week ending Aug. 7, 1943—94
Week ending Aug. 14, 1943—98
Week ending Aug. 21, 1943—95
Week ending Aug. 28, 1943—96

†Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

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MOISTURE-VAPOR RESISTANT BENOWAX *Scores* For Wrappings and Containers

BENOWAX* is the name of a "family" of waxes developed for the specific purpose of providing dependable resistance to moisture-vapor penetration in wrapping and cartoning materials. The following are the outstanding characteristics of BENOWAX:

1. The moisture-vapor resistance of BENOWAX compares favorably with many films ordinarily considered moisture-vapor proof.
2. It provides substantial grease and oil resistance.
3. It exhibits good pliability, fair to strong adhesive power, depending upon the grade.
4. Some grades protect package contents from deterioration due to light.
5. It is low in cost (a fraction of that for most materials that have been used for rendering paper moisture-vapor resistant).

Most of the various grades of BENOWAX are known as "amorphous petroleum waxes." Certain among these have become so important in the manufacture of wrapping materials for war goods that they are available for only these vital military uses.

However, other grades of BENOWAX may be obtained for less essential uses, such as BENOWAX L and BENOWAX P. The important characteristics of BENOWAX L and BENOWAX P are shown in the table below.

The types available for general use may differ fom those you have been accustomed to using. However, in these days of emergency replacement measures to substitute for materials not now generally available. BENOWAX L and BENOWAX P may well provide the solution to your problem. Other grades of BENOWAX, although not suitable for laminating uses, are also available. Just advise Cyanamid.

Moisture-vapor resistant "ordnance wrappings" made of BENOWAX laminated paper are being used to protect metallic military equipment in transit overseas from salt water corrosion.

	BENOWAX L**	BENOWAX P
Melting Point (B&R)	165	145-152 Sharp
Color	Black	Amber
Adhesive bond	Very strong	Fair
Opacity	Opaque	Semi-transparent
Penetration	30-35	125-150
(Viscosity above melting point)	(Gradual drop as temperature rises)	Low

** *Pliable at low temperatures*

Waxes • Rosin Size • Synthetic Resins • Casein • Alum • Sulphonated Oils • Fillers • Defoamers • Soda Ash Caustic Soda • Salt Cake • Acids Clays • Satin White • Aerosol* Wetting Agents • Calmicro (Calcium Carbonate) and other Paper Chemicals

*Reg. U.S. Pat. Off.

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Section of the
TECHNICAL ASSOCIATION
OF THE PULP & PAPER INDUSTRY
122 E. 42nd St., New York 17, N. Y.
Edited by R. G. Macdonald, Secretary

Laboratory Processing of Pulp

(Ball-Mill Method)*

TAPPI Suggested Method T 224 sm-43

This method concerns the processing of pulp by means of a laboratory ball mill ("pebble-mill") prior to forming handsheets for the purpose of determining its behavior when subjected to a definite beating schedule. (*See* also TAPPI methods T 200 m and T 225 sm.) Only the furnishing and processing of the stock and the withdrawal and dilution of samples are described. The forming of the sheets is covered by TAPPI Standard T 205 m and the physical testing by T 220 m.

Apparatus

1. *Disintegrator,* able to handle at least 90 or 360 grams, of dry pulp. The TAPPI standard pulp disintegrator (described in Appendix A of Standard T 205 m) may be used for the smaller quantity. A disintegrator having a vertical shaft, driven at about 1750 r.p.m. with a 3.5-inch diameter slotted disk or propeller at its lower end, and a suitable container for holding the stock, may be used for the larger quantity.

2. *Ball Mill,* equipped with at least one, and preferably four, porcelain-lined crocks having an internal diameter of 10.5 to 10.7 inches and a depth of 13.0 to 13.5 inches. These are mounted in a suitable framework so as to rotate horizontally about their axes at 60 ± 2 r.p.m.

Each mill is charged with from 90 to 110 solid porcelain balls, having a diameter of 1.25 ± 0.05 inches. Each charge shall weigh between 9.5 and 10 pounds and have a volume of 1800 ± 30 cc.

Sampling

When dealing with mill consignments, a sample of pulp of about 4 square inches in area shall be drawn from the interior of every bale included in the official test for moisture (disks bored for the moisture test but *not* dried may be used); or, in the case of a shipment of chemical pulp where the cook numbers are known, the number of samples shall be proportional to the number of bales representing each cook, provided no fewer than 3 samples from each cook are obtained. When neither of these methods is possible, a sufficient number of samples shall be selected in such a way as to be representative of the whole consignment. For a single run the weight of the sample shall be equivalent to at least 450 grams of moisture-free fiber.

Storage of Pulp Samples

Moist pulp samples should be stored under water with a few drops of formaldehyde and kept in a cool place away from direct sunlight. Dry pulp samples should be stored in suitable packages away from heat or light.

Test Specimen

Weigh out, to the nearest 5 grams, a representative sample of the pulp, obtained by tearing (do not cut the pulp or use cut edges) approximately equal portions from all the samples collected, equivalent to 450 grams of moisture-free fiber. If the sample is dry, wet it with cold water, tear into pieces about one inch square and soak in water for 4 hours. Moist pulps may be disintegrated immediately.

Note: As far as is known, soaking a pulp for a longer time (for example, overnight) does not appreciably affect the results.

Procedure

DISINTEGRATION

Dilute the 450-gram sample for 4 charges and the unbeaten test, or 90 grams for a single charge, to a consistency of 4.3% (10.5 or 2.1 liters, respectively) and disintegrate until the fibers are separated, as indicated by a lack of undefibered portions of pulp. A period of about 10 minutes in the large disintegrator or 5 minutes in the standard disintegrator is normally sufficient. If this consistency is too high for the disintegrator available, use the maximum consistency it will handle satisfactorily, then concentrate the pulp to 4.3% consistency, using a bolting cloth.

MILLING

Add a charge of 90 grams of pulp at 4.3% consistency to each crock, close tightly, and rotate the first crock for 1200 revolutions, and the following ones for 3600, 4800 and 6000 revolutions, respectively (20, 60, 80 and 100 minutes).

At the completion of each beating period dump the contents of each crock into a bucket, remove the balls,

*This method is suggested by the Pulp Testing Committee as being the most suitable to date. It is not, however, a TAPPI Standard. Criticisms are earnestly requested and should be sent to R. G. Macdonald, Secretary, Technical Association of the Pulp and Paper Industry, 122 E. 42nd St., New York, 17, N. Y.

dilute to 9 liters (1.0% consistency) and withdraw enough pulp to prepare sets of test sheets (7.5 grams of moisture-free fiber are sufficient for a standard set of 5).

CLEARING

Dilute each sample to 1.0% consistency (15.0 grams moisture-free to 1.5 liters) and disintegrate in the standard disintegrator (*see* TAPPI Standard T 205 m) for 15,000 revolutions (5 minutes).

DILUTION

After clearing, dilute the stock to 0.15% consistency (15 grams to 10 liters) and prepare a set of sheets according to TAPPI Standard T 205 m.

Report

The test results shall be reported according to TAPPI Standard T 220 m. The report shall state the beating intervals and note any departures from the standard procedure. A curve is usually desirable, showing the development of the apparent specific gravity and the burst and tear factors plotted against the beating time or its logarithm.

Additional Information

In some mill laboratories pulps are often compared after beating to a maximum burst development with the laboratory beater (*see* TAPPI method T 200 m) or the ball mill. In other laboratories, usually European, pulps are compared after beating to a definite slowness, 70 or 80 Schopper-Riegler, or sometimes to 500 Canadian standard freeness.

In other cases, it is considered to be more desirable to ascertain the approximate equivalent amount of beating to be given the pulp by the mill for the grade of paper into which it is to be made, and to use this degree of beating for comparing or specifying the pulp. The equivalent degree of beating may be established by taking a sample of the unbeaten stock furnish in the mill and drawing curves showing the development of its density, burst, tear, breaking length and freeness (or drainage time or factor) against the time of beating. A sample of the fully prepared mill stock, which preferably should be secured from one of the wet presses on the machine, is lightly disintegrated and made into a set of sheets, the physical tests of which are marked on the corresponding development curves of the unbeaten furnish and the nearest equivalent time selected. Stock from the machine headbox or elsewhere, used for comparisons in this way, is mixed with fine material normally circulating in the machine and stock preparation systems and may give misleading results.

When the apparent specific gravity of the standard test sheets is plotted against the logarithm of the time of beating, excluding the point for the unbeaten pulp, the location of which is somewhat variable, a straight line should result. The slope of this line gives a measure of the rate of beating of the pulp; or the slope of this line with a standard pulp may be used to check the rate of beating of the ball mill.

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Laboratory Processing of Pulp

(Kollergang Method)*

TAPPI Suggested Method T 225 sm-43

This method concerns the processing of pulp by means of a laboratory kollergang prior to forming handsheets for the purpose of determining its behavior when subjected to a definite beating schedule. (*See* also TAPPI methods T 200 m and T 224 sm.) Only the furnishing and processing of the stock and the withdrawal and dilution of samples are described. The forming of the sheets is covered by TAPPI Standard T 205 m and the physical testing by T 220 m.

Apparatus

1. *Disintegrator.* The specifications of the disintegrator are given in Appendix A of TAPPI Standard T 205 m.

2. *Kollergang*[1]. The plan view is shown in Fig. 1 and Fig. 2 is a section. It consists of an annular V-shaped tub, *A*, made of cast iron and chromium plated, with a circular hard stainless steel track, *B*, 12 mm. wide and 28 cm. (11 inches) in diamater, inserted in the bottom, upon which the three runners (*C*) rotate. These rolls are about 2 inches thick and also of chromium-plated cast iron. They are 11 inches in diameter, with their circumferences bevelled to 45 degrees. Phosphor bronze rims *D* carry the working edges, as shown in Fig. 3, which are 9 mm. wide and about 3 mm. deep. The rims are inserted around the runners and are fastened with countersunk screws. The outsides of the edges are normally 1 mm. deep and it will be seen that all edges being vertical, even after wear, the only dimensions affecting the action of the runners (the width of the edges) will be constantly maintained.

The three runners have bronze bushings connected through bevel gears, *E*, to a stationary bevel gear, *F*,

* This method is suggested by the Pulp Testing Committee as being the most suitable to date. It is not, however, a TAPPI Standard. Criticisms are earnestly requested and should be sent to R. G. Macdonald, Secretary, Technical Association of the Pulp and Paper Industry, 122 E. 42nd St., New York, 17, N. Y.

[1] The standard kollergang may be obtained in the United States from the Hermann Manufacturing Co., Lancaster, Ohio.

the bushings rotating on steel shafts, *N*. The gears and dimensions are so arranged that a pure rolling motion of the center of the edge of the runners is achieved without a slip. The frame (*G*) carrying the runners and propeller system, rotates about the vertical stub shaft (*H*) carried in the center bushing. The frame is free to move vertically so that the weight of all the rotating elements is carried by the runners. This amount is adjusted to exactly 80 kg. by means of the weight *W*, so that a pressure of 26.6 kg. is applied to each working point.

The propellers (*J*) are driven by means of individual motors, *R*. The propellers are 1 inch in diameter and shaped as shown in Fig. 2 with their bottom surface 7/16 inch above and central to the steel track and rotate between 6000 and 8000 r.p.m. The rotaing parts are driven between 30 and 40 r.p.m. by means of suitable belt and gear drive (*T*) and ⅜-h.p. motor, *S*.

A counter (*L*, Fig. 1), which can be reset to zero, is actuated at every complete revolution of the runners. A wash-out plug for cleaning the trough is shown at *M*. A time switch (*V*) controls the motors and is preferably calibrated in number of revolutions of the kollergang. It is used to stop all the motors when any desired number of revolutions have been completed.

A doctor (*O*) made of 3/32-inch brass wire is carried on each arm of the spider. Each doctor is 3 inches long and works in the groove of each runner to prevent plugging of the grooves. A single brass doctor (*P*) of 3/16 by 3/32 inch brass, 9 inches long, is carried by the rim of the spider and sweeps and stock on the outer side of the tub into the trough. A similar doctor (*Q*) works on the vertical side of the trough. The doctors O, P and Q are self-cleaning and effectively keep the apparatus clean and all the stock in the trough.

3. *Standard Scraper and Gage 3 mm. Wide,* to check the faces of the runners.

4. *Stock Sampler.* Large teaspoon or dessert-spoon with handle suitably bent.

5. *Graduated Cylinder,* 1000 ml. capacity.

6. *Balance,* weighing up to 500 grams with a sensitivity of 0.2 gram.

Calibration

Lift the framework, including the runners and small motors, out of the tub and weigh. Adjust the total weight to 80 ± 0.5 kg. (176 ± 1 pounds).

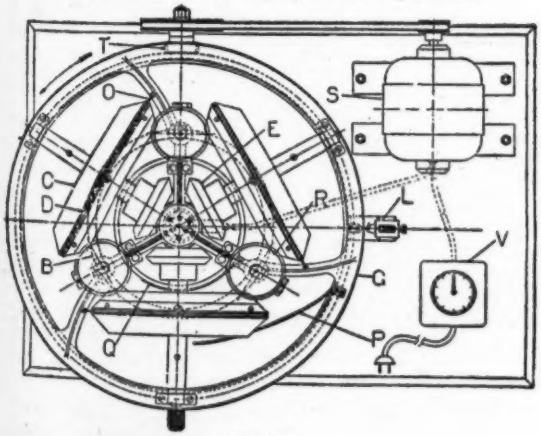

FIG. 1
Plan of Kollergang

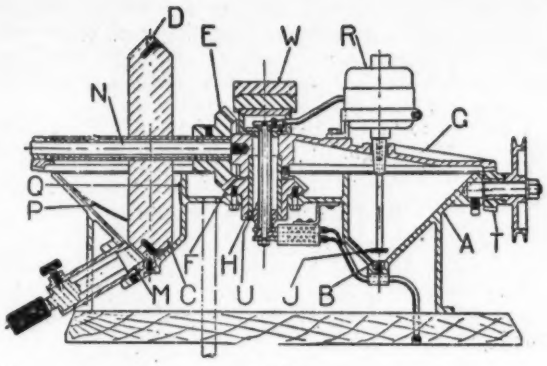

FIG. 2
Section through Kollergang

After every 100 beating tests, check the width of the rims on the runners and if necessary correct with the special scraper provided. The scraper in turn shall be checked and set with a feeler gage 3 mm. wide. To check the contact between the faces of the runners and the track, smear a thin film of artist's prussian blue on a section of the face of each runner, rotate the framework through three quarters of a turn and observe that the print made by each runner is uniform and in the center of the track.

Note: After a little use faces of the rims of the runners become slightly pitted. This is a normal condition and has been shown to have no appreciable effect on the action of the apparatus. Normally the faces do not require attention for periods of many months at a time. The rims of one instrument in continuous use for over two years did not require scraping during that period.

When the depth of the vertical edges of the runners becomes 0.2 mm. or less, the rims shall be replaced. The rims should give several years' service before requiring replacement.

The speed of the disintegrator motors shall be 7,000 ± 1000 r.p.m. The height of the bottom of the propellers above the track shall be about 12 mm. (7/16 inch). The framework of the kollergang shall rotate at 35 ± 5 r.p.m.

Sampling

When dealing with mill consignments, a sample of pulp of about 4 square inches in area shall be drawn from the interior of every bale included in the official test for moisture (disks bored for the moisture test but *not* dried may be used); or, in the case of a shipment of chemical pulp where the cook numbers are

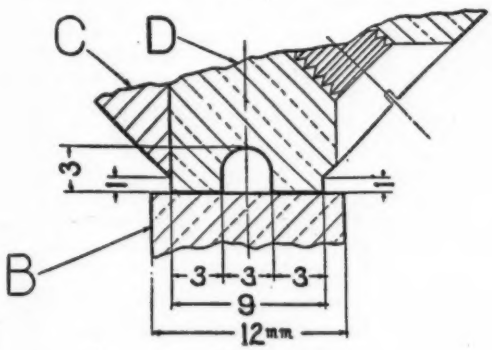

FIG. 3
Section of Rim

known, the number of samples shall be proportional to the number of bales representing each cook, provided no fewer than 3 samples from each cook are obtained. When neither of these methods is possible, a sufficient number of samples shall be selected in such a way as to be representative of the whole consignment. The weight of the sample shall be equivalent to at least 150 grams of moisture-free fiber.

Storage of Pulp Samples

Moist pulp samples should be stored under water with a few drops of formaldehyde and kept in a cool place away from direct sunlight. Dry pulp samples should be stored in suitable packages away from heat or light.

Test Specimen

Weigh out to the nearest 0.5 gram a representative sample of the pulp, obtained by tearing (do not cut the pulp or use cut edges) approximately equal portions from all the samples collected, equivalent to 75 grams of moisture-free fiber. If the sample is dry, wet it with cold water, tear into pieces about one inch square and soak in water for 4 hours. Moist pulps may be disintegrated immediately.

Note: As far as is known, soaking a pulp for a longer time (for example, overnight) does not appreciably affect the results.

Procedure

During the procedure for processing and sheet making, for precise work the temperature of both the thick and the dilute stock and the sheets and blotters in the press shall be between 20 and 25° C.

Disintegration

Make up the 75-gram sample to 2500 ml. (3% consistency) and disintegrate for 15,000 revolutions (5 minutes) in the standard disintegrator, but with the propeller clamped so that its lower edge is 2 inches from the base of the container—i.e., 1 inch higher than usual. After disintegration, measure out 250 ml. (7.5 grams) for the unbeaten test and empty the remainder of the stock into the trough of the kollergang.

When testing some forms of ribbed pressed kraft it will be necessary to disintegrate the fibers longer than 15,000 revolutions in order to secure the necessary complete defibrillation. In such a case report the total number of revolutions used. Fortunately such pulps usually require considerable beating in practice so that results for the unbeaten state are not of direct interest.

For very long, incompletely defibered rag and similar pulps, which may rope the propeller, it is necessary to unwind the ropes from time to time during disintegration and snip them into ¼-inch lengths with a small sharp pair of tin snips. When such pulp is added to the kollergang it should be diluted to 1.5% consistency. Because of the construction of the rims of the runners, the reduction in consistency from 3% to 1.5% will not materially affect the results for pulps of this class, particularly for the first few beating amounts. Weak rag or rope stocks may be treated at 3% consistency in the usual way without difficulty.

Beating Periods

The standard beating periods for pulps shall be 0, 1, 2, 4, 8, 16, 32, 64, and 128 revolutions in the kollergang per gram of pulp treated. While for some purposes it is sufficient to test the qualities of a pulp after a single period of beating (8 revolutions per grams is suggested), it is recommended that tests be made of at least three, and preferably four, periods according to one of the following series:

		Revolutions per gram				
(1)	For pulps easily beaten	0	1	2	4	8
(2)	For normal pulps	0	2	4	8	16
(3)	For pulps difficult to beat	0	4	8	16	32
(4)	For pulps very difficult to beat	0	8	16	32	64
(5)	For special purposes	0	16	32	64	128

Note:. Easily beaten pulps (Series 1) include soda pulp, most bleached sulphites and some easy bleaching sulphites; normal pulps (Series 2) include strong bleached and normal unbleached sulphites and bleached sulphates. Series 3 includes strong unbleached sulphites and sulphates; Series 4 includes kraft, very strong sulphites and strong rope half-stuffs. The series are chosen so that the tensile strength attains about its maximum value between the last two periods.

Processing

Set the counter at zero and start the runners and propellers. Commencing with 67.5 grams of pulp and allowing for 7.5 grams to be removed after each beating period, the cumulative revolutions on the counter will be as follows:

	Revolutions			
Series 1	68	128	233	413
Series 2	135	255	465	825
Series 3	270	510	930	1650
Series 4	540	1020	1860	3300
Series 5	1080	2040	3720	6600

If the kollergang revolves at about 34 r.p.m., the intervals between sampling under the same conditions are approximately as follows:

	Minutes			
Series 1	2	2	3	5½
Series 2	4	3½	6	10½
Series 3	8	7	12½	21
Series 4	16	14	25	42
Series 5	32	28	49	85

When the end of each period has been reached, stop the apparatus. Then, using the sampling spoon, withdraw 250 ml. (7.5 grams dry-weight) of the stock, taking about a third from between each of the runners. In this operation care must be taken not to disturb the consistency of the stock and it is recommended that the pulp be removed in portions by slipping the spoon sideways into the stock and withdrawing it not quite full, no attempt being made to stir the stock, or the water and the pulp will separate. Furthermore, with the stock in the initial stages of beating, rather more than 250 ml. will have to be withdrawn, especially with long-fibered pulps, to give 7.5 grams of dry fiber, as it is impossible to prevent some separation of the water and stock.

After sampling, if by any chance there should be any stock adhering to the sides of the runners or elsewhere, return it to the trough before commencing the next beating period.

Clearing

Dilute each 250-ml. sample of beaten stock to 1.5 liters and disintegrate for 7500 revolutions (2½ minutes) in the standard disintegrator with the propeller in the normal position, 1 inch from the bottom of the container.

The stock for the unbeaten test is not further disintegrated.

Dilution and Sheet Making

After clearing, dilute the stock to 5 liters (0.15% consistency). Measure out an exact 800-ml. portion and form a single sheet in the sheet machine, couch

and dry in an oven or on a hot plate and weigh. Compute the volume required to make a sheet weighing exactly 1.2 grams and, using the adjusted volume, make the remaining stock into 5 sheets which should weigh between 1.14 and 1.26 grams each (60 grams per square meter, with a tolerance of 5%.) Dry, condition and test the sheets according to TAPPI Standard T 220 m.

Report

The test results shall be reported according to TAPPI Standard T 220 m.

It is recommended that the report include at least the following information for each beating period chosen, including the unbeaten test results: basis weight (grams per square meter); density (apparent specific gravity); breaking length (in meters); tear factor (metric basis); drainage time in seconds (corrected to 20° C. and 60 grams per square meter); and a note of any deviations from the method prescribed.

Note: The results determined from test sheets made from the 250-ml. sample of the unbeaten pulp in this method shall be known as the "unbeaten" test results and reported only in conjunction with the results for the beating test. The "initial" strength tests are those from test shees made from pulp which has been disintgrated strictly according to Standard T 205 m.

It is usually desirable to include a graph showing the development of the various qualities plotted agains the beating in revolutions per gram or preferably log r.p.g.

Precision

Duplicate determinations from different sets of samples from the same shipment and on different instruments in different laboratories may be expected to agree as follows, provided that the paper-testing instruments are carefully standardized and that the standard test methods are closely adhered to.

Burst factor	within 5%
Breaking length	within 7%
Tear factor	within 10%
Apparent specific gravity	within 2%
Drainage time	within 7% or 0.5 second, whichever is the greater

Additional Information

In some mill laboratories pulps are often compared after beating to a maximum burst development with the laboratory beater or ball mill. (*See* TAPPI methods T 200 m and T 224 sm.) Usually, however, there is no fall in the bursting strength after reaching the maximum when pulp is processed with the kollergang.

It is considered to be more desirable to ascertain the approximate equivalent amount of beating to be given the pulp by the mill for the grade of paper into which it is to be made, and to use this degree of beating (number of revolutions per gram) for comparing or specifying the pulp. The equivalent degree of beating may be established by taking a sample of the unbeaten stock furnish in the mill and drawing curves showing the development of its density, burst, tear, breaking length and drainage time or factor against the r.p.g. A sample of the fully prepared mill stock, which preferably should be secured from one of the wet presses on the machine, is lightly disintegrated and made into a set of sheets, the physical tests of which are marked on the corresponding development curves of the unbeaten furnish and the nearest equivalent time or r.p.g. selected. Stock from the machine headbox or elsewhere, used for comparisons in this way, is mixed with fine material normally circulating in the machine and stock preparations systems and may give misleading results.

Under standard conditions, 1 r.p.g. in the kollergang is comparable to about 2 minutes of beating in the laboratory beater. However, the latter cuts the stock very little in comparison with normal commercial beating equipment, and the burst and tensile strengths are developed at a relatively greater rate than the other qualities. Not many types of commercial paper are made from pulp beaten for more than the equivalent of 20 minutes in the laboratory beater or 10 r.p.g. in the kollergang.

When the apparent specific gravity of standard test sheets is plotted against the logarithm of r.p.g., placing the unbeaten point at about 1 r.p.g., a straight line results if all conditions are in order. The slope of this line gives a measure of the rate of beating of the pulp.

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Clark, James d'A. and von Hazmburg, R. S. "Further Notes on the Kollergang." *Paper Trade J.* 102 No. 14:35-38 (April 2, 1936); *Tech. Assoc. Papers* 19: 163-66 (1936).

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New Pneumatic Atomizing Nozzle

For use in the many modern processes requiring close control of atmospheric conditions, Spraying Systems Co., Chicago, Ill., has developed an improved type of pneumatic atomizing nozzle. In this nozzle, the Type JHS, water and compressed air are mixed externally to produce a round spray. This spray is projected from 10 to 20 feet depending on air pressure used in the humidifying system.

Because this new nozzle is a complete unit in itself, it can be quickly and easily adapted to almost all types of installations. In the Type JHS, two monel metal strainers—one for air, the other for water—are included right in the body of the nozzle. This permits easy removal of the strainers for cleaning or replacement without disturbing the nozzle or lines. It eliminates every possibility of clogging the nozzle orifice by pipe scale or other dirt loosened by accidental jarring of lines.

All parts of the Type JHS are accurately machined of brass and white coated, and every part is easily renewable. Every detail of this nozzle's construction contributes to simplified maintenance, lower operating costs, and improved atomization.

May Replace Damaged Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 1, 1943—Newspaper publishers have been advised that they may replace damaged or destroyed inventory paper without violating the War Production Board newsprint Limitation Order L-240.

Interpretation No. 3 of this order points out that when inventory paper including print paper on hand, available for use, and in transit, is destroyed or damaged so that it becomes unusable, the publisher may accept additional paper to replace it.

This holds whether the paper was actually delivered to the publisher or was in transit when destroyed or damaged. The acceptance of additional paper by a publisher under these circumstances will not constitute a violation of paragraph (d) (2) which limits inventories, the interpretation points out.

Cylinder Machine Vat-Circle Width*

By John B. Gough[1]

Abstract

The problem of the vat-circle width is difficult, and certain factors are possibly of major importance in their affect on operation and formation. Any further great improvement in the formation on cylinder machines is unlikely, especially at high machine speeds, regardless of the perfection of the approach flow, circle proportions, etc.

The width of the vat circle, where the flow of dilute stock first enters it, and the relation of the width at this particular point to the width at other points, such as at the bottom and back of the circle, has very probably been more discussed and has certainly resulted in more divergence of opinion and more confusion than has been the case with any other single feature of cylinder machine vat design, not even excluding the important features of the approach flow to and in the vat and just before it arrives at this circle. By the term "width of the vat circle" I of course mean the approximately radial distance between the moving cylinder mold wire and the more or less circular and stationary plate which surrounds the submerged part of the cylinder mold wire and which together form a more or less circular passageway for the flow of stock being formed into a mat on the cylinder mold wire.

While, in the last five or ten years, a much better understanding of the importance of the approach flow, both towards the vat and towards the circle within the vat, has resulted in considerable improvement in the design of these particular features and a consequent noticeable improvement in the smoothness and uniformity of the flow towards the circle and in the resulting formation, at least where the machine speeds have not been correspondingly increased, it would seem extremely doubtful that any similar advance has been made in the design of the vat circle, either in appreciating its importance or in a knowledge of what its proportions and actual dimensions should be to give the best formation, even at a definite and fixed machine speed and with all the other operating conditions also fixed and known, such as basis weight, stock quality and freeness, diameter of cylinder mold, consistencies of feed and white water, direction of flow in circle with reference to direction of cylinder rotation, percentage recirculated, if any, etc. If all, or even a few of these factors are variable, as in a cylinder machine making various weights, with different stocks, and at different speeds, the situation is much worse, since long, patient (and expensive) experiment and operating experience will eventually solve the circle problem for a fixed condition, but can hardly be expected to do so for conditions that vary greatly from day to day, or even from hour to hour.

I very firmly believe that the rather recent general drift towards parallel flow operation—i. e., where the flow in the circle is in the same direction as the rotation of the cylinder mold—together with the recirculation of part of the feed to the circle, has helped considerably to reduce the operating difficulties at the higher machine speeds, as well as appearing to be a much more logical and hydraulically sound principle, as well as in line with fourdrinier operation; because this parallel flow and recirculation obviously gives the operator one additional adjustment by means of which he can very readily change the velocity ratio between the average stock velocity of flow in the circle and the velocity of the wire on the cylinder to almost any value he wishes to try out, say between 0.2 and 2.0, and without having to change the width of the circle, providing his pump, or pumps, are sufficiently large for the recirculation required. Such an easy adjustment of this velocity ratio is most certainly not available in the contraflow vat, where it would be necessary to change the circle width, or the feed consistency, to change this velocity ratio at all, there being generally no recirculation, or reason for recirculation, in the contraflow design, which design already provides only an extreme velocity ratio (or high relative velocity), but can never provide moderate velocity ratios approaching 1.0 (or zero relative velocity), which is approximately the ratio almost invariably used on all types of fourdrinier machines.

It must be pointed out, however, that the Pusey & Jones "adjustable circle" and the Sandy Hill "adjustable cylinder mold," both of which are "parallel flow" designs, do most certainly recognize the importance of circle width and provide for adjustment of this width, so that, by trial and error, the most suitable circle width proportions can be found for any particular set of operating conditions, and without having to rebuild the vat.

Formation Discussion

While the above discussion, emphasizing the importance of circle widths, appears to me to be both logical and reasonably hydraulically sound, and is more or less substantiated by the generally more uniform formation obtained on fourdrinier machines at the same machine speed, or even at higher machine speeds, but usually also having considerably more drainage area for the same basis weight of sheet, I must admit that the relatively small gain in formation, if any, when we change from contraflow, with its very high relative velocity between flow and forming wire, to parallel flow, with its much lower relative velocity between flow and forming wire, indicates that the question of circle width is more of theoretical than practical importance. I believe, however, that a more thorough study and analysis of the flow and forming conditions in the circle of a parallel flow vat, and especially the relative velocities between the flowing stock in the circle and the moving mat on the wire, may result in minor operating adjustments and a further improvement in the formation available from a parallel flow vat, compared to that possible from a contra-flow vat, and this approximate analysis is the main subject of this discussion.

Before proceeding with a detailed study and ap-

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proximate analysis of the flow velocities within the circle, and particularly the flow velocities which are very closely adjacent to the moving cylinder mold wire, and still more closely adjacent to the rather weak and easily disturbed mat of stock being formed on this wire, I wish to say again, as I have stated in previous papers on fourdrinier headboxes, that the most uniformly distributed and random oriented fiber sheet formation will result when there exists the least possible relative velocity (in the plane of the wire) between the fibers which are still in suspension and the fibers already deposited on this forming wire, thus allowing the preferaby *slow* drainage velocity, in a direction normal or at right angles to the wire, to deposit additional fibers on the wire in the perfect and uniform felting action that nature will unquestionably carry out, if this natural action is not prevented by the existence of eddy or flow velocities parallel to the wire, or too high a drainage rate, which latter also tends to prevent the individual fiber from finding the nearest thin spot or hole in the mat and in its immediate vicinity. That this is really the case is confirmed by the much more perfect formation produced in laboratory handsheets, where, in addition to low consistencies and drainage rates, every care is taken to reduce eddies or any relative velocity in the plane of the forming wire. This laboratory sheet could be, of course, quite successfully formed in a moving train, or in any aeroplane, so that only relative velocity, and not the absolute velocity of the wire, is of any theoretical importance. Of course, even perfect flow conditions in the circle cannot possibly give even a very good formation on the wire, if the flow entering the circle is imperfect and contains large flocs or bundles of fibers, or large eddies, or a velocity of approach to the circle inlet that varies considerably across the width of the machine. All that correct circle conditions can ever do, at the best, is to make sure that a well mixed and dispersed smooth flow to the entrance of the circle is not spoiled in the circle. Of course, the converse of this is equally true, and imperfect flow conditions in the circle can certainly spoil the most perfect flow to the circle.

Velocity

In considering flow conditions in the circle, it is of course important to know as much as possible about the velocity of, say, an individual fiber as it flows circumferentially around the circle from the circle inlet towards the circle outlet (or back) and at the same time flows radially inward from the stationary surface of the circle to the moving wire surface or mat. This latter radial movement or flow is due to the differential head on the cylinder mold wire and we are not particularly concerned about it, since it is at right angles to wire and does not greatly affect formation, unless this radial velocity is abnormally high. The circumferential velocity of this fiber (and water), as it flows around the circle during its approach towards the wire, is important however, because this velocity is in planes parallel to the wire and will certainly cause imperfect formation, or even disturb good formation already formed on the wire, if this fiber velocity is not *exactly* the same, and in the same direction, as the wire or mat velocity *before* it reaches the wire or mat surface. We know that this fiber has no circumferential velocity while it is in actual contact with the stationery circle surface, and we also know that it will have the same circumferential velocity as the wire or mat when it is in firm contact with either of them. In order to get the best possible formation it is necessary that this fiber has exactly the same circumferential velocity as the wire or mat before it touches either of them, and preferably before it gets too close. It is quite possible to obtain this desirable condition, if the circle widths and operating conditions as to feed consistency and recirculation, etc., are arranged to suit, and if the flow to the circle is sufficiently perfect.

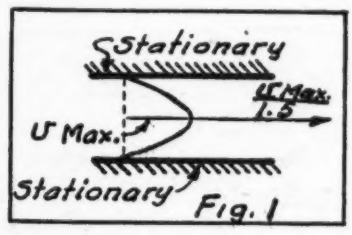


FIG. 1
Flow Due to Head or Pressure Difference

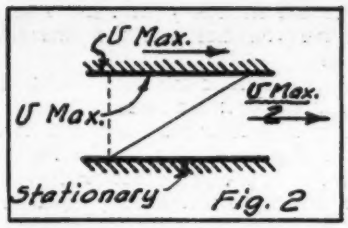


FIG. 2
Flow Due to Friction, and Pumping of Moving Plate

If water is made to flow at a low velocity between two smooth stationary parallel plates, which are not too far apart, so that the cross-section area for flow is a narrow rectangle of relatively great length, this flow will be what is termed streamline, viscous or laminar, and there will be absolutely no eddies. Under this flow condition, the flow velocity will be zero at the surface of the stationary plates and a maximum midway between them; the velocity of flow increasing as the distance from the fixed surface is increased, as shown in Fig. 1., and the average velocity will be two thirds V maximum.

If, instead of keeping both plates stationary, as in Fig. 1, only one plate is kept stationary and the other is given a velocity V maximum in the same direction as the flow, as in Fig. 2, then the flow velocity will be zero at the stationary plate and a maximum (V maximum) at the moving plate, the velocity of flow increasing uniformly and proportionally as the distance from the fixed surface is increased, as shown in Fig. 2, and the average velocity will be half V maximum.

While the circle flow takes place between the cylindrical moving wire and the approximately cylindrical stationary circle plate, and not between two flat plates, exactly the same type of flow and velocity distribution will take place in the circle flow as between the flat plates of Fig. 2, providing all velocities involved are low and therefore of the laminar type and if the flow is due to the frictional drag of the cylinder wire and mat, except that centrifugal force and constant total energy requirements demand a slight additional slowing of the velocities near the

outer radius and stationary plate and a slight speeding up of the velocities near the inner radius and moving wire.

If the circle flow and the wire velocity are therefore sufficiently low, it can be seen that the velocities across the circle width will vary in a straight line exactly as in Fig. 2, (except for the slight modification due to *C. F.*), providing that the average velocity across the circle width is exactly equal to half the velocity of the wire (and if the flow is due to cylinder rotation only). This relationship can readily be obtained for any wire speed and circle width, both at front and back of circle, in the parallel flow design, by providing a suitable feed volume of flow at the circle inlet and a suitable recirculating volume of flow at the circle outlet. It must be noted, however, that such a straight-line velocity distribution will give a circle velocity close to the wire that will be slightly slower than the wire and therefore not quite right for the best formation.

If the volume of flow is gradually increased, both at the circle inlet and outlet (by a difference in vat level), so that the average velocity at the inlet and outlet exceeds half the velocity of the wire, then this gradual increase in flow volume must eventually result in a flow-velocity diagram exactly like Fig. 3, in which the circle velocity is exactly equal to the wire velocity, not only at the wire or mat surface, but also for an appreciable distance away from the wire or mat surface. This is the condition required for the best possible formation.

Unfortunately, however, even slow-machine speeds, say 50 f.p.m., are far above the maximum velocity for truly laminar flow, so that turbulent flow, with its inevitable eddies, will be present in all normal vat circles, and this will modify the velocity diagram shown in Fig. 2, to approximately that shown in Fig. 4. The general effect is to cause a relatively more rapid change in velocities near both the solid surfaces. By increasing the volume of flow and average velocity of flow in the circle somewhat more than was required for Fig. 3 (laminar flow), it will be possible to obtain a velocity-flow diagram similar to Fig. 3, but with a slightly higher average circle velocity. The circle velocity can still be made exactly equal to the wire velocity for an appreciable distance away from the moving wire and mat.

If the velocity of flow in the circle is increased too much, by making the average circle velocity too much in excess of half the velocity of the wire, then a flow diagram like Fig. 5 will result, which may be just as incorrect as Fig. 4.

Velocity Ratio

According to the above discussion therefore, by suitably proportioning the circle inlet and outlet width to suit the flow into and out of the circle, it is quite

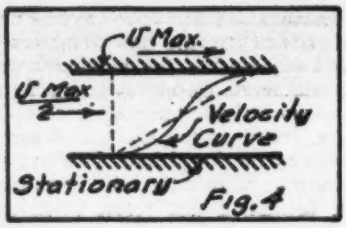


Fig. 4

possible to get a velocity diagram similar to Fig. 3, where there is no relative velocity (except eddies, etc.) between the moving wire or mat and the closely adjacent velocity of flow in the circle. Unfortunately, with turbulent flow, it is extremely difficult to calculate exactly what average circle velocity will give a velocity diagram similar to Fig. 3, (even using a flow net or conformal mapping), but we can be sure that the ratio between the average circle velocity and the wire velocity must be definitely more than 0.5 and less than 1.0.

While it is of interest and certainly should be of some practical value to know that the best velocity ratio between average circle velocity and wire velocity is between 0.5 and 1.0, for a parallel flow vat having the best possible headbox and approach flow, it still leaves a rather wide range for error (100%) in feed volume for a given circle and machine speed. It is possible to determine the best point in this range of 0.5 to 1.0 by accurate observation of the stock levels at the circle inlet and outlet. Referring to Fig. 3, which gives the best possible velocity distribution in the circle for the best possible formation, the circle velocity is constant and equal to the wire velocity for an appreciable distance from the wire or mat surface thus eliminating any relative velocity between the closely adjacent circle flow and the wire or mat. It naturally follows that there will be no shear force or friction between the circle flow and the wire or mat surface. Under this condition, the cylinder wire and mat cannot help to pump the flow around the circle, neither can the circle flow help to rotate the cylinder. Therefore the stock level or head at the circle inlet must be sufficiently higher than the stock level or head at the circle outlet or overflow to provide the necessary flow around the circle.

If, therefore, the stock level is exactly the same at circle inlet and circle outlet, it is quite obvious that there is no hydraulic head available to overcome the liquid friction and cause the stock to flow around the circle from inlet to outlet. It is obvious that the cylinder wire and mat must do this pumping, since no other source of energy is available, and, if the wire and mat is doing this work on the stock in the circle, then there will be slip and relative velocity between the

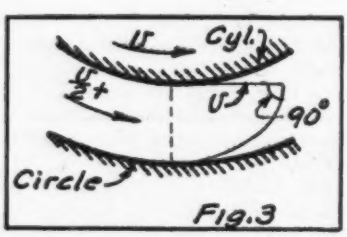


Fig. 3

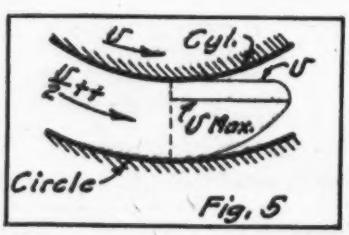


Fig. 5

flow and the wire or mat, which may disturb the mat on the wire and is not the ideal flow shown in Fig. 3 or Fig. 6b but more like Curve a shown in Fig. 6. Now, if we very carefully and slowly lower the recirculating dam, located at the circle outlet, without changing the feed volume to the circle, which has been previously adjusted to give a circle velocity ratio between 0.5+ and 1.0—, this will gradually take the pumping load off the wire and mat until, eventually, the wire and mat will be doing no work on the circle flow at all (Curve b) which is desired. The stock level at the circle outlet will be found to have dropped slightly below the level at the inlet, thus providing the necessary hydraulic head required for all the flow around the circle. If every other detail of operation was quite constant, it would be found that the stock level at the inlet would not change during this operation of lowering the dam, since the flow is the same, only the energy required to produce this flow has been transferred from the wire or mat to the vat levels, as it should be. If, however, the recirculating dam is lowered still more than that to produce Curve b, then the inlet stock level will start to fall because the flow will then increase and Curve c will result and the stock flow will now be helping to rotate the cylinder mold. It is important to note that, if the dam is not again lowered still further, equilibrium will soon be re-established, but at a lower stock level, and Curve b will again be produced.

It should be obvious from the above discussion that it would be unwise, when operating within the "velocity ratio" range of 0.5 to 1.0, to approach either of these limits too closely as this would leave little margin for error in the data or operation and would reduce "operating tolerance," and I would suggest a "velocity ratio" close to 0.66, as this happens to be the correct velocity radio *if* the liquid shear in the circle flow is exactly proportional to the distance from the wire or mat surface, as in laminar flow, giving zero liquid shear at the mat surface and zero velocity at the circle surface. It should be clear that, based on the above discussion (and the assumption *if*), it would be impossible to obtain the best possible formation with circle velocity ratios of exactly 0.5 or less, or 1.0 or more.

While, theoretically, it would be possible to obtain this velocity ratio of 0.66 with very narrow circle widths, by providing suitably small flows into and out of the circle, and thus reduce the flow volume and size of pump required, as well as reducing the effect of headbox imperfections, which imperfections almost certainly increase as the *square of the flow*, such relatively narrow circle widths greatly increase the possibility of turbulent flow eddies disturbing the perfect formation desired, so that a practical balance between these conflicting factors must be made, taking into account the possibility of flocculation with wide circles and low velocities, especially at low machine speeds.

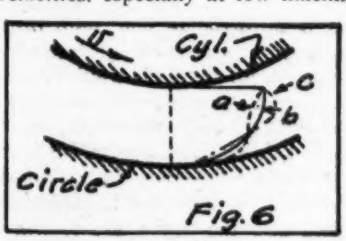


FIG. 6

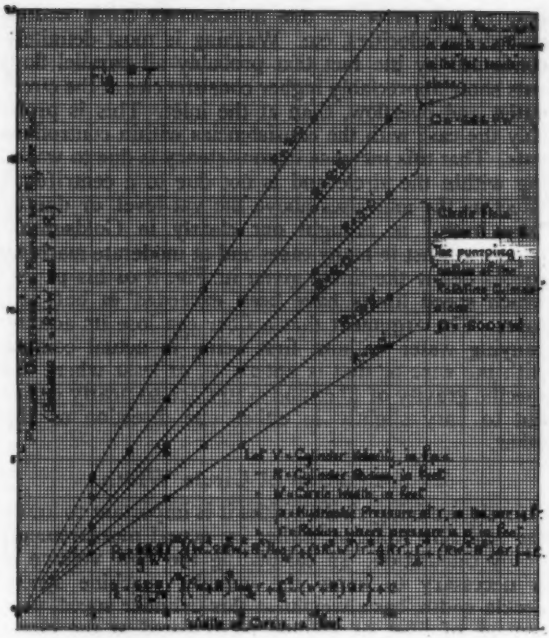


FIG. 7

Note: The above Curves are Based on the Equations, Assuming V = 400 Feet per Min., and Give the Drop in Pressure between the Surface of the Circle and the Cylinder, or Mat, for the Two Types of *Laminar* Flow. $P_{.666}$ is Pressure at r when Average Circle Velocity Ratio = .666. $P_{.5}$ Is Pressure at r when Average Circle Velocity Ratio = .500

Intermediate Circle Widths

The width of the circle at the inlet being thus suitably decided upon, and the width at the outlet being made such that the same average circle velocity exists at both points, it remains to discuss the intermediate circle widths, between inlet and outlet. An exact solution of such an extremely difficult problem as this seems very unlikely, if only because of the discontinuous differential head variations around the circle. However, on the assumption that the forming rate on the wire, and therefore the width of the circle also, varies inversely as the distance from the circle inlet, it is not difficult to arrive at a solution, which is as follows:

Let W = Width of circle at inlet, inches. Then, $y = \dfrac{(W-w)\,x^2}{L^2} + w$

w = Width of circle at outlet, inches.
L = Mean total length of circle flow from inlet to outlet, inches.
y = Width of circle at some intermediate point, inches.
x = Distance from outlet, where circle width is y inches.

By substituting the value $L/2$ for x in the above equation, it will be noted that the value of y obtained indicates that 75% of the total formation would be completed by the time the wire has travelled halfway through the circle, say approximately at the bottom of the circle. According to actual tests by Goldsmith, in his valuable paper on "Cylinder Machine Formation," *Technical Association Papers* 21:125 (1938), the actual formation accomplished in half the forming length was less than 66%. In actual practice it may happen, and I feel quite sure does frequently happen at small mold heads, that a very appreciable amount of fiber, that has already been deposited more or less satisfactorily on the wire, is washed off again and has to be again deposited, either due to large eddies or large velocity variations in the approach

flow to the circle, or due to incorrect circle widths and circle velocities, etc. Washing is most definitely confirmed by the fact that probably all parallel flow vats show appreciably higher consistencies at the circle outlet and overflow, than at the inlet. This is probably the case with the consistencies within controflow vats. That this increase in consistency is due to washing within the circle and is not due to a centrifugal effect as the mat rises above the vat level, or due to "slip back," is brought out clearly in Goldsmith's paper; at least in many cases and at moderate machine speeds below the limits given in Fig. 8 of his paper, which speed limits have been exceeded in but few cases. The argument that a fiber can lose its accompanying water without first being in actual contact with the wire or mat is untenable, at least where the specific gravity of fiber and water are so nearly equal, but to vary slightly in either one direction or the other.

Determination of Circle Width

In determining circle widths it is important to know the real flow volume; either by actual measurement, or by calculation. In calculating the flow volume it is necessary to know the cylinder machine speed, deckle width, basis weight at this cylinder speed, percentage of fiber or volume recirculated at the circle outlet or overflow, and the moisture-free consistency to and from the circle, in the white water and on the cylinder wire as it approaches the couch roll. It is most important to know accurately the consistency leaving the circle and going over the overflow dam, especially if this stock is much thicker than the feed to the circle. A relatively small amount of thickening at this point will cause a large increase in the flow to the circle. These calculations are best made by the use of equations, as follows:

Let S = Pounds moisture-free fiber, at a%, in the (new) thick stock furnish to the machine.
T = Pounds moisture-free fiber, at b%, in the sheet, or mat, approaching the couch roll.
V = Pounds moisture-free fiber, at e%, in the flow to the circle inlet.
R = Pounds moisture-free fiber, f%, in the recirculated flow from the circle outlet.
W = Pounds moisture-free fiber, at c%, in the recirculated white water.
U = Pounds moisture-free fiber, at c%, in the surplus white water to saveall or sewer.

Then:
$$V = \frac{R\left(1-\frac{c}{f}\right)+T\left(1-\frac{c}{b}\right)}{1-\frac{c}{e}}$$

Also, if P = the g.p.m., recirculated at f%, then:
$$V = \frac{\frac{P}{12}(f-c)+T\left(1-\frac{c}{b}\right)}{1-\frac{c}{e}}$$

Also, if n = the percentage of total flow volume recirculated, then:
$$V = \frac{T\left(1-\frac{c}{b}\right)}{1-\frac{1}{e}\left\{c+\frac{n}{100}(f-c)\right\}}$$

After finding V by means of one of the 3 above formulas, then the remaining values can be readily found, in succession, as follows:
$$U = \frac{T\left(1-\frac{a}{b}\right)}{\frac{a}{c}-1},\quad S = U + T,\quad R = \frac{Vfn}{100e},\quad W = V-S-R.$$

Unless the flow volumes are fairly accurately directly measured, which is a rather difficult and long job, the above equations are by far the most simple and accurate method of obtaining the flow volume, which, after obtaining V, is simply 100 (V/e) (in pounds per minute). The trial use of these formulas for V, using one or two slightly different and slightly higher values for f, than is used for e, will very quickly convince one what a great effect this recirculated consistency f has on the flow volume, as well as being such a sure indicator of spoiled formation.

Forces and Hydraulics

After reading the above necessarily detailed discussion, it is possible that the enthusiastic designer or operator may wish to, figuratively, "roll up his sleeves" and "sink his teeth" into this "rock that has so long opposed the smooth flow of the river of progress" as well as of vats, to use the mixed metaphor accredited to the Irish, and do something about it. Very unfortunately, however, there is one more "nigger in the woodpile" wherever curved or circular flow exists that must be examined in some detail, "before going off the deep end."

As mentioned briefly earlier in the discussion, circular flow in the circle creates centrifugal forces in the liquid (and its solid) that result in an appreciable increase in the velocity of flow near the inner radius and a somewhat similar decrease in the velocity of flow near the outer radius. This is true and observable also in river bends with fixed banks as well as in eddies with no banks. It is probably more correct to say, however, that this centrifugal force increases the pressure within the fluid near the outer radius and decreases it near the inner radius, and that total energy requirements balance this by velocity changes.

In general, therefore, we may expect to find that the actual pressure in the stock flowing closely adjacent to the outside surface of the wire or mat is less than we might otherwise expect from the level in the vat, or from the vertical head of stock over any particular point on this surface of the wire or mat. It is more than likely that we would also find that the pressure of the white water inside the cylinder and near the inside surface of the wire, where it is being dragged around by the rotation of the wire, bars and "spiders," would be greater than that due to the head of white water, thus helping to defeat the purpose of the differential head which has been provided, which purpose is to force water inwards through the wire and mat, while leaving the fiber behind.

The fundamental relation between the pressure and the radius in curved stream flow is well known and can be found in almost any good book on hydraulics. It is dp/dr equals W_1V^2/gr, and it gives, when suitably applied, the change in pressure as the radius changes, and, when integrated and with the proper constants, it gives the actual pressure at any radius, providing that the variable v is known and expressed in terms of r.

Again it is unfortunate that, with turbulent flow, we cannot be sure as to the exact law of variation in the velocity v across the circle width W, that is necessary to produce a velocity curve of a type similar to Fig. 3 and thus give the most ideal forming conditions, but IF it should happen that this law of velocity variation is exactly the same for turbulent flow as it is for laminar flow, then the rate of change in this velocity, and also the liquid shear, will be proportional to the distance x from the cylinder wire or

mat and dv/dx equals ax, and the velocity at any point in the circle width will be:

$$v = V_1 \left(1 - \frac{x^2}{W^2}\right)$$

where V equals the velocity of the cylinder wire. Also $Q = 0.666\ VW$ and the circle average velocity ratio will be 0.666. On this basis it is possible to combine the two simple differential equations:

$$\frac{dp}{dr} = \frac{W_1 v^2}{gr} \text{ and } \frac{dv}{dx} = ax$$

into an exact equation giving the difference in pressure between any point on the wire or mat surface and a corresponding point, say, on the circle surface.

After solving these equations, a significant thing will be noted; it is that this difference in hydraulic pressure between a point on the outside surface of the cylinder wire or mat and a corresponding point on the inside surface of the circle increases as the "second" power of the cylinder wire velocity (or machine speed), and is also influenced very greatly, but in a somewhat complex manner, by both the circle width and cylinder diameter. As the machine speed is increased, therefore, this difference in hydraulic pressure will increase even more rapidly, and, since the average hydraulic pressure across the circle width must remain constant at any machine speed because it is the result of the vat level only, the hydraulic pressure in the circle flow adjacent to the wire or mat must lower equally rapidly and, at high machine speeds and low mold heads, may become sufficiently low to cause cavitation and eddies, or even outward radial flow of white water, with disastrous results on the formation. After substituting numerical values in these equations, based on a machine speed of 400 feet per minute, a cylinder diameter of 60 inches, and circle widths ranging from 2 to 12 inches, it is found that this pressure difference, and this lowering of the pressure adjacent to the wire or mat, also increases very rapidly as the circle width is increased but, even for a 12 inch wide circle, this pressure difference was less than 16.5 pounds per square foot, or about 3.16 inches of water, which might not be a serious matter if the differential or mold head being carried is 24 inches or more, as it might well be in such a case, but it probably would be a very serious matter if the mold head were only 2 or 3 inches.

Somewhat similar equations and numerical calculations were worked out for the case where the circle flow is produced or maintained by the cylinder rotation, (Fig. 2) in which case, for laminar flow, dv/dx equals a, and the circle average velocity ratio = 0.500. In this case also it was found that this pressure difference increases as the "square" of the machine speed, but not quite so rapidly as the circle width is increased.

While the above figures are all based on laminar flow, which is not really possible under the actual conditions, it is possible that this pressure difference may be as great, or even greater, with turbulent flow. Consequently, it may not be always advisable, or even possible, to operate under the ideal forming conditions as per Fig. 3 and with a circle average velocity ratio of about 0.666. In high-speed operation, with low basis weight of sheet per vat and low-mold head, and with a relatively wide circle, better formation may be obtained with arrangement as shown in Fig. 2 and with a circle average velocity ratio of 0.500, or even less. It is thus more easy to appreciate why Goldsmith quotes operating ratios of as low as 0.200, although still quite difficult to appreciate why such high ratios as 2.000 should be used and, presumably, found advantageous in some cases.

Conclusion

While the above discussion still leaves the matter in a very unsatisfactory state, it at least emphasizes the difficulty of even a rough theoretical analysis, as well as the difficulty of arriving at the best circle width in any given case by experimental operation. It does, however, indicate certain factors that are quite possibly of major importance in this problem and the way in which they may affect operation and formation. It indicates that any further very great improvement in the formation from cylinder machines is unlikely, especially at high machine speeds, no matter how perfect the approach flow and the circle proportions, etc. However, further study and experimental operation is necessary before these indications should be definitely accepted as facts.

APPENDIX

Comparison of Parallel and Counterflow Vats

My previous discussion has dealt, almost exclusively, with the parallel flow vat and I have since then been requested to amplify my few remarks on the contraflow vat and make a further comparison between these two very different types. Thus curves shown in Fig. 7 show the drop in pressure between a point on the inside surface of the circle and a corresponding point on the outside surface of the cylinder wire or mat for 4, 5, and 6 feet diameter cylinders, circle widths from 0.2 to 1.0 feet, and for a cylinder speed of 400 feet per minute; all based on laminar flow and for the best theoretical forming conditions as per Fig. 3, where the circle flow is due to a difference in vat levels only, as well as for the case where this circle flow is caused by the rotation of the cylinder only, as per Fig. 2. The equations used for obtaining these curves in Fig. 7 are also given, but it should be pointed out that extreme care and accuracy is required to obtain reliable numerical results.

These curves show very clearly that, at 400 feet per minute cylinder speed and with laminar flow in the circle, possible cavitation and the resulting poor formation are both less likely to occur as the cylinder diameter is increased, the circle width reduced and as the energy required to produce this flow in the circle is changed from the Fig. 3 type to the Fig. 2 type by reducing the ratio of the average circle velocity to cylinder wire velocity from 0.666 to 0.500, or less. It is also to be noted from the equations given that this possible cavitation increases as the "square" of the machine speed, as mentioned previously.

While it is true that the greatest drop in pressure shown in the curves of Fig. 7 is only about 16 pounds per square foot, and even this has to be divided by two, approximately, to give the drop below the average pressure in the circle width at this point, the equivalent differential or mold head required to just balance this cavitation would be 1½ inches and, of course, much more than this if drainage and formation are required, whereas no differential head at all is available to even balance this cavitation at either the start or finish of the so-called forming area. In addition to this, the corresponding cavitation with turbulent flow in the circle probably will be appreciably greater than that due to laminar flow. Therefore, even if a

large nominal differential head, say 20 inches or more, has been provided in the operation, the maximum effectiveness of this large positive head will be reduced by 1½ inches and will become negative near the start and finish of the forming area with resultant disturbance of formation, especially of the completed formation.

At high-machine speeds on relatively small diameter cylinders, and especially if operated with small mold heads, it may be better to use relatively narrow circle widths, or an average circle velocity ratio of 0.500 or less in order to reduce cavitation, even although such a procedure increases the drag on and possible disturbence to the mat being formed on the wire. Of course, an increase in the consistency of the stock being supplied to the circle can be made to accomplish this same purpose, but, in this case, the mold head required would also be reduced, thus tending to defeat the desired object of reducing cavitation. If the average circle velocity ratio is reduced or the consistency increased in order to reduce cavitation, then in both cases the back circle width and overflow should also be reduced to suit. This requires complicated and careful adjustment.

As mentioned in the beginning of this discussion, the desired object has been to obtain a uniform formation with random fiber orientation, but if a somewhat greater tensile strength in the machine direction is desired then a slight departure from Fig. 3 and towards Fig. 2 is necessary, or towards Fig. 5 or Fig. 6 (a & c). This is not difficult, in fact, the really difficult thing is to prevent it. However, it does not seem at all reasonable to suppose that a very large "drag" or "combing" effect is required, and certainly not as great as that unavoidably present in the contraflow vat, and it is my opinion that the only reason the contraflow vat does not actually produce a still more directional sheet is because of the extremely violent eddies in the circle, which cannot be avoided when two liquid streams are moving past one another in opposite directions at high speed.

The parallel flow vat can be made to produce as directional a sheet as the contraflow vat, much more uniformly, consistently, and easily, and can also produce a much less directional sheet, at least at moderate machine speeds and where cavitation does not force the operator to depart greatly from Fig. 3 velocity diagram.

Possibly, the only real advantage that the contraflow vat possesses is that its *effective circle width* is really less than half its actual circle width, due to the fact that its actual width supplies the channel for both oppositely flowing streams, and thus cavitation is reduced, as per Fig. 7. Since the generally used circle widths for both parallel and contraflow vats are in rough agreement for similar machine conditions, it seems possible that somewhat reduced circle widths on parallel flow vats would show an added advantage, at least at high-machine speeds.

While the hydraulics involved in a study of the circle flow on a contraflow vat is even more difficult than is the case with a parallel flow vat, some figures indicate that the circle width, where the stock enters the circle, should be about 25% greater than the width at the back, if the relative velocity between the mat and the flow, and also the frictional drag on the mat, is to be the same at both points. This does not seem to agree at all with usual practice, where the stock inlet width is usually much less than at the back. Whether this general practice is the result of actual experience and trial and error, and therefore sound, or the result of a theory that the front width has only to pass the flow in one direction, whereas the back width has to pass it in both directions, I do not know. However, it is interesting to note that it is much more important to have a relatively narrow circle width where the stock enters and the finished mat leaves, from the cavitation point of view.

There remain many other factors that merit careful observation and discussion, such as stock consistency, drainage area and differential head, elimination of air from reused white water, vacuum inside mold, position of couch roll and felt leads, use of water doctor, rejection of fines or closed white water system, etc., and all of these probably have some effect on our main discussion, but proabably the most important of all is the means and method of delivering the stock to the circle inlet.

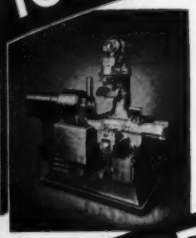
This flow to the circle inlet must be uniform in velocity and consistency across the entire width and also with time, and free from large eddies, otherwise any of the other refinements mentioned are of little value. While the leading and most advanced designs now available leave very little room for further improvement, many machines are not so equipped.

Probably the leading designs are:—The Pusey & Jones flow spreader, The Sandy Hill "Bertram" flow box and the double opposed flow headers, with or without recirculation, as made by Black-Clawson and Beloit. The "branching" or "candlebra" manifold, as well as the multipass flow box have also been recently installed in improved forms but are not believed to be as effective unless in a "series" combination, or with the addition of perforated boards or rolls, etc. Even these first three leading designs will not be at all satisfactory if they are not followed by carefully designed, located and arranged perforated boards, rolls, or some form of multiple-pass box, to suit the exact operating conditions and so that the flow to the circle is as perfect as is reasonably possible with such devices, which means far from actual perfection anyway.

While any of the three leading types mentioned are capable of producing a uniform flow across the machine width, both as regards velocity and consistency, and could be designed to do still better, if the increased expense, space, and washing-down demands warranted it, they all have relatively good and bad features. The Pusey & Jones spreader probably absorbs least hydraulic head and is relatively most independent of the necessary changes in flow volume that accompany speed or order changes on the machine; on the other hand it probably takes the most space and washing up. The Beloit or Black-Clawson double opposed header does the best mixing, if this is necessary, but is not so independent of volume changes. The Sandy Hill "Bertram" flow box comes in between these two, and, like the opposed headers, requires more hydraulic head than the Pusey & Jones flow-spreader.

The saying that "a chain is only as strong as its weakest link" is also true for a cylinder machine installation and satisfactory operation requires the elimination of all the weak links, one at a time if necessary, and the weakest first, but steady progress in eliminating them nevertheless.

TODAY



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New York Paper and Pulp Market Review

Demand For All Paper Items Is Heavy—Wood Pulp Market Reflects Increasing Inadequacy of Supply For Many Normal Uses—More Mills Campaign For Increased Collections of Waste Paper.

Office of the PAPER TRADE JOURNAL,
Wednesday, September 8, 1943.

Demand for all types of paper is heavy with no favorable reports to indicate any appreciable improvement in distribution. Lack of manpower continues the basic factor and the inadequate supply of labor is being more acutely felt in the war production industries as in pulpwood and in all divisions of the paper industry. The utilization of Italian prisoners of war, quartered in the south, to aid in cutting pulpwood, has been proposed to increase the wood supply. Late reports indicate the influx of women into essential war work is below expectations, and the shift of workers to war work is being steadily advocated by the War Manpower Commission.

A further cut of 5% in the consumption of newsprint is quite widely viewed as a first step and that another 5% reduction is almost certain to be ordered before the end of the year. A steady decline in the production of many types of paper for civilian use is generally expected.

Paper production for the week ended August 28 was estimated at 91.5%, compared with 83.3% for 1942, with 102.4% for 1941, with 83.4% for 1940, and with 85.0% for the corresponding week for 1939.

Paper board production for the week ended August 28 was 96.0%, compared with 77.0% for 1942, with 97.0% for 1941, with 74.0% for 1940, and with 73.0% for the corresponding week for 1939.

Further limitations in the use of grocery and variety bags has been ordered and similar reduction in some other paper items are reported impending.

Wood Pulp

No favorable reports of the increasing threat of a wood pulp scarcity have currently been received. The wood pulp market is strong and the present strict allocation regulations are not expected to be relaxed and a more drastic curtailment of pulp to mills not given a high essential classification as to products, is quite widely looked for.

Rags

Mill buying of new cotton rags continues active this week. Colored cuttings are in heavy demand, and new white cuttings are also active. Ceiling prices are readily paid. Old rags are also active. The roofing mills are reported buying steadily in good volume. Prices are at ceiling levels.

Old Rope and Bagging

All grades of Manila rope are in heavy demand. The limited supply of No. 1 Manila is now being more acutely experienced to meet the heavy demand for war uses.

The scrap bagging market continues under the influence of the adverse effects of WPB restrictions. Trading is being done cautiously and on a very limited scale. Prices are nominal.

Old Waste Paper

The short supply of waste paper against heavy current mill demand continues to indicate a more acute supply situation in almost all grades. More mills have joined in the campaign to increase collections of paper stock. Ceiling prices are freely paid on all grades at this date.

Twine

No important change in the twine market has been reported at this date. Demand for strong fibers is very heavy, both for cordage and twine. Prices are very firm.

Reinhold-Gould Appoint G. W. Hartman

Harry E. Gould, president of Reinhold-Gould, Inc., announces the appointment of George W. Hartmann as advertising and promotion director of the firm.

Mr. Hartmann knows the paper field from many years of experience. For 17 years he was affiliated with Henry Lindenmeyr & Sons in executive capacities—as assistant to the president and later as advertising and sales promotion manager.

Before that, a period with the American Express Company put at his fingertips all data connected with the direct-by-mail business. Here, Mr. Hartmann was not only in charge of purchasing and printing of all stationery, etc., but he installed a complete letter shop which handled a volume of work of all types.

Mr. Hartmann's services will be available to the printing industry and customers of Reinhold-Gould—as well as direct-by-mail houses who can utilize his knowledge and experience in connection with their own businesses.

Eli de Vries an American Citizen

The officers and staff of Parsons & Whittemore, Inc., paper exporters, 10 East 40th street, New York, gave a dinner on Wednesday at the Shelton Hotel to Eli de Vries, president of the company, in honor of his becoming an American citizen.

Mr. de Vries has for a long number of years been widely known as a leading exporter of paper and paper products. Preceding the war, he made his headquarters in Holland, but, after the invasion of that country, he came to the United States and joined Parsons & Whittemore, and is now head of that concern.

Brown Co. Buys Waste Paper

CONCORD, N. H., September 7, 1943—The Brown Company of Berlin announced today it will buy all waste paper salvaged by New Hampshire citizens, regardless of the amount or grade. A company spokesman, informed the state salvage division this is a radical departure from the usual policy of the concern. Shortage of pulpwood, he said, has become so acute that any type of paper will now be used.

UNION EQUIPMENT

We can still supply information and help in maintaining your *Union* equipment. We are sorry, but we can't supply you with new installations. If it is a matter of keeping present machines running, we will be glad to do all we can.

UNION MACHINE COMPANY
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Charleston, South Carolina

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, September 8, 1943.

BLANC FIXE—Demand for blanc fixe is fair. Prices continue unchanged. The pulp is quoted at $40 per ton, in barrels, at works; the powder is quoted at $60 per ton, f.o.b. works.

BLEACHING POWDER—Current demand is reported active. Prices are unchanged. Quotations on bleaching powder range from $2.50 to $3.10 per 100 pounds, in drums, car lots, at works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 24 cents per pound; 2,000 pounds, 24¼ cents per pound; less than 2,000 pounds, 24¾ cents per pound, f.o.b. shipping point.

CAUSTIC SODA—Demand reported above supply for the current week. Prices continue unchanged. Solid caustic soda is quoted at $2.30 per 100 pounds; flake and ground is quoted at $2.70 per 100 pounds; all in drums, car lots, at works.

CHINA CLAY—Prices on china clay are unchanged. Current demand is reported fair. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mine. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Supply situation reported tighter but adequate to demand. Prices are unchanged. Chlorine is currently quoted at $1.75 per 100 pounds, in single unit tank cars, f.o.b. works.

ROSIN—Prices on some grades are higher for the current week. "G" gum rosin is quoted at $3.99 per 100 pounds, in barrels, Savannah. "FF" wood rosin is quoted at $3.89 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is currently quoted at $4.18 per 100 pounds, f.o.b. works.

SALT CAKE—Quotations on salt cake are reported unchanged for the current week. Domestic salt cake is quoted at $15 per ton, in bulk. Chrome salt cake is quoted at $16 per ton. All prices in car lots, f.o.b. shipping point.

SODA ASH—Supply situation reported tight under heavy current government requirements. Quotations continue unchanged. Current prices, car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Supply situation continues tight. Quotations are unchanged for the current week. The pearl grade is quoted at $3.10 per 100 pounds; powdered starch at $3.20 per 100 pounds; all prices in bags, car lots, f.o.b. Chicago.

SULPHATE OF ALUMINA—Price of iron free advanced 50 cents per cwt. on September 1 by OPA. The commercial grades are quoted at from $1.15 to $1.25 per 100 pounds, in bags, car lots, f.o.b. works. The iron free is quoted at $2.35 per 100 pounds, in bags, at works.

SULPHUR—Quotations on sulphur continue to conform to prevailing market prices. Annual contracts are quoted at $16 per long ton, f.o.b. mines; at Gulf Ports, $17.50 per long ton.

TALC—Prices on talc continue to conform to prevailing quotations. Domestic grades are currently quoted at from $16 to $21 per ton, at mills; Canadian at $24 per ton. All prices in car lots.

The Pennsylvania Salt Manufacturing Company of Philadelphia announces the addition of Horace F. McIntyre to its Pennsalt Cleaner Division as a sales and service representative to cover the Philadelphia territory.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

News, per ton—

Roll, contract	*$54.00	@	—
Sheets	62.00	"	—

* OPA Maximum Price.

Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill

Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag	*4.375	"	—

* OPA Manufacturers' Prices.

Tissues—Per Ream—Carlots

White No. 1	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½	1.00	"	—
White No. 2	.90	"	—
Anti-Tarnish M.F.	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—

Toilet—1 M. Sheets—Per Case

Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—

Paper Towels, Per Case—

Unbleached, Jr.	2.60	"	—
Bleached, Jr.	3.20	"	—

Manila—per cwt.—C. l. f. a.

No. 1 Jute	11.25	@	—
No. 1 Manila Wrapping, 35 lb.	6.00	"	6.25
No. 2 Manila Wrapping, 35 lb.	5.75	"	6.00

Boards, per ton—

News	*48.00	@	—
Chip	*45.00	"	—
Sgl. Mla. Ll. Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*63.00	"	—
Binders Boards	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	29.90 " 35.00
75% Rag	23.00 " 27.00	24.15 " 28.25
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$10.55@$12.75	$11.70@$14.25
No. 2	9.65 " 11.75	10.80 " 13.25
No. 3	9.20 " 11.25	10.35 " 12.50
No. 4	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper. Delivered in Zone 1:

No. 1 Glossy Coated	$13.65@$13.90
No. 2 Glossy Coated	12.40 " 14.00
No. 3 Glossy Coated	11.60 " 13.25
No. 4 Glossy Coated	11.15 " 12.75
No. 1 Antique (watermarked)	10.25 " 11.75
No. 2 Offset	9.60 " 11.00
A Grade E. F.	9.35 " 10.75
A Grade S. & S. C.	9.60 " 11.00
B Grade E. F.	8.85 " 10.25
B Grade S. & S. C.	9.10 " 10.50
C Grade E. F.	8.55 " 9.75
C Grade S. & S. C.	8.80 " 10.00
D Grade E. F.	8.25 " 9.50
D Grade S. & S. C.	8.50 " 9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight, Not Exceeding OPA Allowances.

Bl. Softwood Sulphite	$76.00
Unbl. Softwood Sulphite	65.00@ 66.00
Bl. Hardwood Sulphite	73.50
Unbl. Hardwood Sulphite	63.50
Bl. Mitscherlich	81.00
Unbl. Mitscherlich	72.00 @ 82.00
N. Bleached Sulphate	86.00
S. Bleached Sulphate	79.00
N. Semi-Bleached Sulphate	82.00
S. Semi-Bleached Sulphate	75.00
N. Unbl. Sulphate	71.00
S. Unbl. Sulphate	63.50
Bl. Soda	66.00
Unbl. Soda	62.00
Groundwood	46.00

Transportation Allowances Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area)	10.50
West Coast (out area)	16.50

	50%-80% Air Dry Weight
Northeast	$11.50
Lake Central	11.50
Southern	14.00
West Coast (in area)	9.50
West Coast (out area)	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—

New White, No. 1	6.50	@	7.25*
Silesias No. 1	—	"	5.75*
New Unbleached	6.75	"	7.50*
Blue Overall	—	"	5.50*
Fancy	—	"	3.50*
Washables	—	"	3.00*
Bleached Khaki Cuttings	—	"	4.25*
Unbleached Khaki Cuttings	—	"	3.50*

* OPA Maximum Prices.

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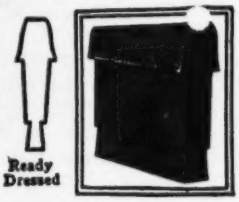
LABOR SAVING—TIME SAVING

THE MOST ECONOMICAL FILLING THAT CAN BE PUT IN A MORTISE WHEEL



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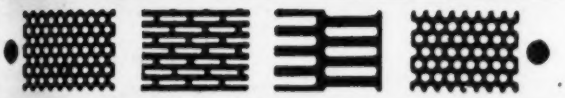

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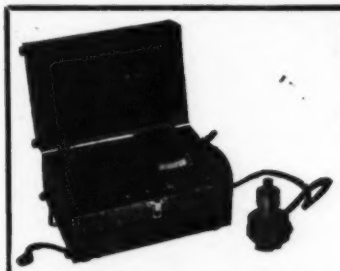

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- UNIFORMITY
- SERVICE

STARCHES

SPECIAL GRADES FOR BEATER, CALENDER AND TUB SIZING

CLINTON COMPANY CLINTON, IOWA

Old Rags

White, No. 1—			
Repacked	*3.80	"	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.55	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
Old Manila Rope	5.75	"	—

OPA Maximum Prices.

Foreign Rags

All Prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	3.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shoppperies	1.30	"	1.45
New Shoppperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.25	@	4.35
Wool Tares, light	4.25	"	4.50
Wool Tares heavy	4.50	"	5.00
Bright Bagging	4.50	"	4.85
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	5.50	"	—
No. 1 Sisal Strings	*4.00	"	—
Mixed Strings	2.00	"	—

* OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.57½	"	—
Mixed Books	.85	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Mixed Ledger, colored	1.87½	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.85	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.15	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
Old Corrugated Containers	.82½	"	—
Mill Wrappers	.85	"	—

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.26	"	—
Unpolished—			
Box	.17½	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—

(Hard Fiber)

Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila	—	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White No. 1	.07½	@	.07½
New White No. 2	.04½	"	.05
Light Silesias	.04½	"	.04¾
Silesias No. 1	.04	"	.04¼
Black Silesias, soft	.03¾	"	.04
New Unbleached	.07¼	"	.07½
Washable Prints	.03¼	"	.03½
Washable No. 1	.02	"	.02¼
Blue Overall	.04½	"	.05½
Cottons—According to grades—			
Washable shredding	—	"	.01¾
Fancy Percales	.03¼	"	.03½
New Black Soft	.02¾	"	.03
New Dark Seconds	1.75	"	2.00
Khaki Cuttings—			
No. 1 O. D.	.03	"	.03¼
No. 2 Mixed	.02¼	"	.02½
Corduroy	.01¾	"	.02¼
New Canvas	.04¾	"	.05¼
New Black Mixed	—	"	.02½

Domestic Rags (Old)

White No. 1—Repacked	3.80	"	—
White No. 2—Repacked	2.90	"	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings— (Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
Sisal Rope	3.75	"	—
Mixed	1.00	"	1.50
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.80
Wool Tares, heavy	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
Soft White Shavings, one cut	2.50	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Hard White Ledger	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Box Board Cuttings	.72½	"	—
Kraft Corrugated Cuttings	2.25	"	—
Old Corrugated Containers	1.15	"	—
Overissue News	.85	"	—
No. 1 News	1.00	"	—

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Overissue News	.85	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.15	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	3.75	@	4.00
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*4.25	"	—
Mixed Rope	1.35	"	1.50
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	4.50	"	5.00
Jute Carpet Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3.60	"	3.85
Wool Tares—			
Foreign	(nominal)		
Domestic	4.25	"	—
Aust. Wool Pouches	4.65	"	4.87½
New Burlap Cuttings	4.75	"	5.00
Heavy Baling Bagging	4.00	"	4.25
Paper Mill Bagging	2.50	"	3.00
No. 2 Bagging	1.35	"	—

* OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04¾
Fancy Percales	.04¼	"	.01
New White No 1.	.06¾	"	.07
New Light Flannelettes	.05½	"	.06
Canton Flannels, Bleached	.06	"	.06¼
Underwear Cutters, Bleached	.06¼	"	.06¼
Underwear Cutters, Unbleached	.05¾	"	.06
Silesias No. 1	.06	"	.06¼
New Black Silesias	.03	"	.03½
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached	.06½	"	.06¾
Blue Cheviots	.05½	"	.06
Fancy	.02¾	"	—
Washable	.02¾	"	—
Khaki Cuttings	.02¾	"	.03
O. D. Khaki	.03½	"	.03¾
Corduroy	.03¼	"	.03½
New Canvas	.06¼	"	.06¾
B. V. D. Cuttings	.06¼	"	.06¾

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—
No. 2	1.45	"	—
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	5.75	"	—

* OPA Maximum Prices.

Foreign Rags

(F. o. b Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices.

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Misc.	2.15	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Box Board Cuttings	.72½	"	—
Kraft Corrugated Cuttings	2.25	"	—
Old Corrugated Containers	1.15	"	—
Overissue News	.85	"	—
No. 1 News	1.00	"	—
No. 1 White Ledger	2.17½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
No. 1 Roofing Rags	1.55	"	—
No. 1 Roofing Bags	1.45	"	—